3/

REPORT RESUMES

ED 010 628 24

IDENTIFICATION AND DEFINITION OF SUBJECT-MATTER CONTENT VARIABLES RELATED TO HUMAN APTITUDES, VOLUME II, APPENDICES.

BY- KROPP, RUSSELL P. AND OTHERS

FLORIDA ST. UNIV., TALLAHASSEE, INST. OF HUMAN LNG

REPORT NUMBER CRP-2914-2 PUB DATE JAN 67
REPORT NUMBER BR-5-0326-2
CONTRACT OEC-5-10-297
EDRS PRICE MF-$0.45 HC-$11.12 278P.

DESCRIPTORS- *INSTRUCTIONAL MATERIALS, INSTRUCTIONAL DESIGN, INDIVIDUALIZED PROGRAMS, APTITUDE, COGNITIVE ABILITY, LEARNING DIFFICULTIES, LEARNING THEORIES, *SET THEORY, *VOCABULARY DEVELOPMENT, *MATHEMATICS INSTRUCTION, *REDUNDANCY, TALLAHASSEE, FLORIDA

THE SETS OF INSTRUCTIONAL MATERIALS PRESENTED IN THIS VOLUME WERE DESIGNED TO CALL INTO THE LEARNING SITUATION THE MOST HIGHLY DEVELOPED COGNITIVE APTITUDES OF INDIVIDUAL STUDENTS. THE ASSUMPTION BEHIND THEIR DESIGN WAS THAT LEARNING DIFFICULTIES IN VARIOUS SUBJECT-MATTER AREAS COULD BE MINIMIZED BY ALTERING THE CONTENT OF TEXTUAL MATERIAL TO FIT THE INDIVIDUAL'S APTITUDE PATTERN. FOUR SETS OF DATA ARE INCLUDED--(1) MATERIALS FOR REDUNDANCY STUDIES (REDUNDANCY IN TEXTUAL MATERIAL), (2) LEARNING MATERIALS AND TESTS FOR STUDIES OF ELEMENTARY SET CONCEPTS, (3) MATERIALS AND TESTS FOR VOCABULARY LEARNING STUDIES, AND (4) LEARNING MATERIALS FOR MATHEMATICAL OPERATIONS STUDIES. RELATED INFORMATION MAY BE FOUND IN ED 010 627. (JH)

ED010628

FINAL REPORT
Project No. 2914
Contract No. OE-5-10-297

5-0326

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Office of Education
This document has been reproduced exactly as received from the person or organization originating it. Points of view or opinions stated do not necessarily represent official Office of Education position or policy.

IDENTIFICATION AND DEFINITION OF SUBJECT-MATTER CONTENT VARIABLES RELATED TO HUMAN APTITUDES

Volume II

January 1967

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

IDENTIFICATION AND DEFINITION OF SUBJECT-MATTER CONTENT VARIABLES RELATED TO HUMAN APTITUDES

VOLUME II
APPENDICES

Project No. 2914
Contract No. OE-5-10-297

Investigators

Russell P. Kropp
Willard H. Nelson
F. J. King

Faculty Participants

W. Louis Bashaw
Jacob G. Beard

Staff

John B. Davis
Dennis M. Roberts

January, 1967

The research reported herein was performed pursuant to a contract with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

Institute of Human Learning
Florida State University
Tallahassee, Florida

TABLE OF CONTENTS

VOLUME II

Appendix Page

A. MATERIALS FOR REDUNDANCY STUDIES. A-2

  A. Cloze Tests for Redundancy Study I. . . . A-2
  B. Textbooks Sampled for Study I. A-43
  C. Cloze Tests for Redundancy Study III. . . A-48
  D. Achievement Test for Redundancy Study IV. A-58

B. LEARNING MATERIALS AND TESTS FOR STUDIES OF ELEMENTARY SET CONCEPTS. B-2

  A. Posttest. B-17

C. MATERIALS AND TESTS FOR VOCABULARY LEARNING STUDIES III AND IV. C-2

  A. Synonym Production Test Used in Vocabulary Study III. C-2
  B. Synonym Matching Test Used in Vocabulary Study III. C-6
  C. Definition Material Used in Vocabulary Study III. C-9
  D. Synonym Material Used in Vocabulary Study III. C-12
  E. Sentence Material Used in Vocabulary Study III. C-20
  F. Sample Synonym Production Test Used in Vocabulary Study IV. C-28
  G. Synonym Materials Used in Vocabulary Study IV. C-30
  H. Definition Material Used in Vocabulary Study IV. C-68

D. LEARNING MATERIALS FOR MATHEMATICAL OPERATIONS STUDIES. D-2

APPENDIX A

Table of Contents

MATERIALS FOR REDUNDANCY STUDIES....................A-2

Cloze Tests for Redundancy Study I................A-2

Textbooks Sampled for Study I.....................A-43

Cloze Tests for Redundancy Study III..............A-48

Achievement Test for Redundancy Study IV..........A-58

Name ______________________ Teacher ______________________

______________ ____________ Date ______________________

School Attended County

INSTRUCTIONS

This is a reading comprehension test of a new kind. It may be unfamiliar to you, so be sure that you understand this explanation.

In general, you are to read the attached materials as well as you can; try to make sense out of what you see despite the missing words. Every time you come to a blank, try to put back the word you think has been left out. It may be helpful to scan the passage quickly before attempting to fill in the blanks.

If you received:

"__________ Bond's number is 007." You might guess "James." You should then write that word in the blank.

Here is a more difficult example.

"__________ cerebrum is the large __________ portion of the brain __________ makes up about __________ of the brain's total __________.

The sentence makes sense if you insert: "The," "upper," "and," "four-fifths," and "weight."

Notice that only one word goes in each blank, and that all blanks are of the same length. The length of a blank then, is no indication at all of the size of the missing word.

Every fifth word has been deleted from the attached materials. The deleted words may have been abbreviations, hyphenated words, numbers, or any other kind of word.

Some blanks will be easy to fill in. Others will be difficult, and still others may seem impossible. But don't be afraid to guess. You are urged to guess, and it will be to your advantage to do so. Leaving a blank unfilled counts off just as much as guessing the wrong word for it.

Try to finish each test in about ten minutes. If you make any changes, be sure to erase or scratch out your first guess.

Before you begin, fill in the blanks at the top of this sheet.

THE FINAL MOLECULES

__________ the previous sections we __________ previewed two types of __________ action by which energy __________ released: 1, the taking __________ of the molecule's carbon __________, and 2, the removal __________ passing of hydrogens. Where __________ this process end? What __________ the final molecules?

The __________ products of energy release __________ mainly on the enzymes __________ in the cells. And __________, you will recall, depend __________ heredity. Organisms tend to __________ in habitats where their __________ have the right kinds __________ substrate molecules to work __________. Streptococcus lactis, for example, __________ a bacterium with enzymes __________ convert the sugar lactose __________ lactic acid. Lactose is __________ sugar of milk. When __________ microbe grows in milk, __________ lactic acid causes the __________ of curds, and the __________ becomes sour. Man cultivates __________ bacterium and others whose __________ products are responsible for __________ flavors of various cheeses. __________ closely related microbe works __________ the glucose molecule, degrading __________ to lactic acid. It __________ this glucose, along with __________ essentials for living, in __________ rumen of the cow. __________ we call it Streptococcus __________. When the enzymes of __________ cells attack glucose, the __________ depends on whether or __________ oxygen is available. Without __________, the end products are __________ dioxide and ethyl alcohol. __________ yield of energy from __________ fermentation process is extremely __________. It takes less than __________ percent of the sugar's __________ of energy. Also, because __________ damages plasma membranes, dehydrates __________, and has other disorganizing __________, yeast cells are sometimes

WATER IS AN ESSENTIAL FOR LIFE

__________ you weigh 120 pounds __________ could be thoroughly "dried __________' or dehydrated, your weight __________ shrink to about 40 __________. About 2/3 of the __________ of the human body __________ due to its water __________. Oranges, tomatoes, melons and __________ like may contain 90 __________ or more water by __________. Milk contains around 88 __________ water and meat about __________ percent. These and other __________ are sometimes prepared for __________ and shipment by dehydrating __________. When 100 lb. of __________ are shredded and dried __________ the dehydrated product is __________ compressed in a hydraulic __________, the resulting potato "cakes" __________ about one-eighth the original __________ and occupy less than __________ the original volume. Milk, __________ course, must be dried __________ such a manner as __________ to scald the liquid __________ scorch the solid content. __________ calls for evaporating away __________ water in a partial __________. This scheme works because __________ liquids evaporate faster or __________ at a lower temperature __________ the opposing atmospheric pressure __________ reduced. For example, the __________ point of water can __________ reduced from 212°F. __________ 122°F. by decreasing __________ opposing pressure from 760 __________. to 92 mm.

The __________ that dehydrated foods can __________ preserved for long periods __________ time without spoiling shows __________ bacteria and molds also __________ water. These organisms can __________ drying for indefinite lengths __________ time, but they need __________ in order to thrive __________ multiply. The preservation of __________ and meats by drying __________ been practiced throughout the

WHEN WILL YOUR CASE BE TRIED?

__________ us assume that on __________ afternoon you are driving __________ car on a "through" __________ with your mother as __________ passenger. You are driving __________ a safe speed and __________ pavement is dry. At __________ intersection a car driven __________ fast fails to stop __________ as you reach there. __________ efforts to avoid a __________ are useless; the recklessly __________ car smashes into you. __________ addition to other injuries, __________ mother's hip is broken __________ your car is wrecked. __________ weeks later your father __________ that the accident will __________ him about $6,000 in __________ surgical and hospital treatment __________ your mother, buying a __________ car, and hiring help __________ home while your mother __________ convalescing. He has to __________ money to meet the __________. The reckless driver and __________ insurance company either refuse __________ pay anything to your __________ or offer a settlement __________ small that he does __________ want to take it. __________, he secures a lawyer __________ files suit for the __________.

When will the case __________ tried? When will your __________ be able to repay __________ money he has borrowed? __________ it be one month? __________ months? or when?

In __________ parts of the country __________ will be two to __________ years before the case __________ be tried!

This delay __________ a glaring defect in __________ administration of justice. Delay __________ justice often leads to __________. Yet large backlogs of __________ jam the dockets in __________ all courts.

In 1959 __________ parents of some children

THE ROLE OF THE LEAGUE OF NATIONS

__________ the insistence of President __________, the Covenant, or constitution, __________ the League of Nations __________ made part of the __________ peace settlement. The new __________ was entrusted with carrying __________ various provisions of the __________ treaties and could even __________ changes in the treaties __________. It was also supposed __________ lead the way in __________ armaments and in ending __________ diplomacy. However, the most __________ task assigned to the __________ was the peaceful settlement __________ international disputes.

Any war, __________ or war, or other __________ distrubing to international peace __________ be brought before the __________ of Nations. The League __________ then hold hearings and __________ some peaceful method for __________ the dispute. If one __________ the parties to the __________ resorted to war in __________ of the League's decision, __________ might be voted. The __________ could be formally condemned __________ an aggressor, in the __________ that unfavorable world opinion __________ compel it to behave __________. If necessary, the League __________ ask its members to __________ off all trade with __________ offending country. As a __________ resort, it could request __________ members to use armed __________ to stop the illegal __________.

Machinery of the League __________ carry out its functions, __________ League of Nations had __________ main organs--the Assembly, __________ Council, and the Secretariat. __________ Assembly was composed of __________ from all of the __________ nations. (At the League's __________, these totaled fifty-eight.) Each __________, large or small, was __________ as equal and cast __________ single vote. The Assembly

PROTOPLASM

__________ plant cell or animal __________ is almost entirely composed __________ a substance called protoplasm (__________). You can perhaps learn __________ little about protoplasm by __________ the protozoans on your __________. You may observe that __________ protoplasm is almost transparent. __________ may also observe that __________ is slightly gray or __________. Scientists have found that __________ is somewhat like watery __________ or the white of __________ egg. You are not __________, however, to be able __________ discover this fact from __________ observations.

Protoplasm is living __________. In fact, so far __________ we know, it is __________ only living material that __________. When a plant __________ an animal dies, that __________ was protoplasm before its __________ is no longer so. __________ has changed in some __________ not yet understood. The __________ that fills the cells __________ looks for a time __________ as it did before __________ organism died. Also, as __________ as scientists have yet __________ able to discover, it __________ the same chemical composition __________ the same weight before __________ immediately after death. Yet __________ is different, because it __________ longer has whatever it __________ that made it alive.

__________ protoplasm of one living __________ looks like the protoplasm __________ every other living thing. __________ samples of protoplasm from __________ organisms, or even from __________ parts of the same __________, are never exactly alike. __________ of a dog is __________ from that of a __________. That in your hand __________ not quite like that __________ your foot. Moreover, the

THE PHYSICAL PROPERTIES OF WATER

__________ ordinary temperatures, water is __________ colorless, transparent liquid. In __________ pure state it is __________. Any taste noticed is __________ to minerals and other __________. Since these very from __________ location to another, the __________ of water varies also. __________ water freezes at 0° __________and, at sea level, __________ at 100° C. The __________ point, however, will change __________ the pressure changes. In __________ higher altitudes, the boiling __________ of water is somewhat __________ than 100°C.

Water __________ an excellent solvent. Water __________ dissolve more substances than __________ any other liquid on __________. This property is a __________ important factor in the __________ erosion of the earth's __________. Some substances in the __________ crust dissolve in rain, __________ streams, or in marsh __________. The resulting solutions are __________ washed into lakes or __________ ocean. Finely ground fragments __________ sandstone rock are carried __________ by the water and __________ sand.

The minerals dissolved __________ water are taken in __________ plants and are used __________ take new tissue for __________. Food dissolved in water __________ carried throughout all protions __________ the plant. In the __________ body the blood stream, __________ is largely water, transports __________ to every cell in __________ human body.

Water is __________ important solvent used in __________ laboratories and industrial plants. __________ is used in larger __________ than any other chemical __________.

Water expands when it __________. Water is one of __________ few substances that expand __________ they freeze; most substances __________ or shrink. When water

THE EARLY JAPANESE PEOPLE

__________ factors have played a __________ role in Japan's long __________. The basic factor influencing __________ history and development in __________ times was her isolation __________ the mainland of Asia, __________, as you know, she __________ a country of islands. __________ factor helped to keep __________ from being annexed to __________ empire, but the two __________ were so close geographically __________ Chinese culture was able __________ span the East China __________ and the Japan Sea __________ influence the civilization of __________.

The Japanese are a __________ race. The available evidence __________ the belief that in __________ times immigrants came from __________ mainland and from Borneo, __________, and the Philippines. During __________ Chou Dynasty (c.1123-256 __________.C.) many groups of __________ migrated to Japan. During __________ Han Dynasty (202 B.__________.-220 A.D.), Korea __________ under Chinese Rule. After __________, Chinese and Korean weavers, __________, and farmers brought their __________ and culture to the __________. Thus began the raising __________ silkworms. Chinese medicine and __________ Chinese calendar were introduced.

__________ scribes brought to Japan __________ language, the writing, and __________ literature of China. The __________ adapted the Chinese language __________ their own way of __________ images and ideas and __________ much of the Chinese __________. Much later they developed __________ system of phonetic writing __________ simplified the Chinese characters __________ made it easier to __________ them in writing Japanese. __________ step stimulated the growth __________ a native Japanese literature.

__________ classify the Japanese people __________ Mongoloid, but some scholars

MR. SMITH RUNS FOR CONGRESS

__________ we think about elections __________ usually picture exciting national __________, fighting speeches watched by __________ of televiewers, political caravans __________ the nation in a __________ of publicity. But not __________ campaigns for national office __________ like this. A candidate __________ Congress often finds that __________ campaign means a lot __________ dull legwork and exhausting __________ of speeches to small __________. "When you get away __________ the national arena," Pearson __________ Allen have written, "political __________ gets right back to __________ old horse-and-buggy days... What __________ counts is the all-important __________ of personal contract." How __________ member of Congress wins __________ is important; watching him __________ a campaigner helps us __________ him as a congressman. __________ us look at the __________--but rather typical--case __________ John Smith, aspirant to __________?

Why does Mr. Smith __________ to run for Congress __________ the first place? Obviously __________ wants to be a __________--but so do many __________ people. In Mr. Smith's __________, his decision is not __________. The incumbent, he knows, __________ be hard to beat. __________ not sure that this __________ be a good year __________ his party. A campaign __________ mean practically deserting his __________ practice for three or __________ months. It will cost __________. On the other hand, __________ thinks he can win. __________ has served as district __________ and state senator, and __________ feels ready for bigger __________. And, he reflects, a __________ campaigning might help advertise __________ law practice even if __________ shouldn't win. So Mr.

WHAT WAS THE PLACE OF THE CHURCH IN THE MIDDLE AGES?

__________ Bernard trudged along the __________ forest road, his long __________ of coarse brown cloth __________ in the brisk autumn __________. Sandal-shod, he unconsciously avoided __________ deep puddles as his __________ body, toughened by years __________ tramping in all sorts __________ weather, pressed onward. Father __________ was a friar, a __________ priest whose life was __________ to the service of __________ and man.

Father Bernard's __________ were as accustomed to __________ for a sick person __________ holding a plow in __________ furrow as they were __________ turning the pages of __________ prayer book and to __________ the sign of the __________. For this man was __________ only a priest; he __________ a doctor, teacher, bringer __________ news, and good friend __________ to shut-away people in __________ villages and to poor __________ in the towns. In __________ for his services, Father __________ asked nothing but plain __________ and a place in __________ to sleep.

St. Francis __________ St. Dominic founded organizations __________ friars. Father Bernard's brown __________ marked him as a __________ (fran-sis'k'n) friar, a follower __________ St. Francis of Assisi (__________). St. Francis is one __________ the noblest and most __________ characters, not only of __________ Middle Ages but of __________ time. Born into a __________ family, as a young __________ he turned from a __________ of aimless pleasure to __________ of poverty, self-denial, and __________. Soon Francis gathered about __________ a small band of __________ followers who adopted his __________ and way of life. __________ went about preaching and

THE JUDICIARY AND THE LAW

__________ speaking, the judiciary branch __________ out its functions of __________ in two different ways. __________, it determines the guilt __________ innocence of persons accused __________ government of violating ordinances __________ braaking laws; that is, __________ courts make decisions regarding __________ and crimes. Petty violations, __________ as illegal parking, are __________ as offenses and carry __________ light penalties--small fines, __________ of license, some hours __________ days in jail for __________ violations. There are two __________ of criminal lawbreaking: Misdemeanors __________ felonies. Misdemeanors are petty __________ (larceny), disorderly conduct, or __________. They are punished by __________ fines or brief jail __________. Felonies are more serious __________ such as robbery (grand __________), arson, and homicide in __________ first, second, and third __________. The punishments for these __________ heavier--long prison sentences __________ even death.

The second __________ function is to judge __________ between citizens, groups of __________, or citizens and their __________. These cases are called __________. Civil actions in court __________ claims for wrongful injury __________ person or property, or __________ restitution of money or __________ lost by reason of __________, or for harm caused __________ failure to perform a __________. If a person claims __________ has been damaged (he __________ the plaintiff), the court __________ either agree, and require __________ (the person accused of __________ the damage) to pay __________ certain sum, or decide __________ defendant's favor, requiring plaintiff __________ pay court costs. In __________ where a person anticipates __________--to his property, for __________--by somebody else's intended

THE MASS OF AN ATOM AND ITS PARTS

__________ are in the nucleus __________ electrons surround it. Most __________ the mass of the __________ is in the nucleus. __________ two statements imply that __________ electron weighs far less __________ a proton; this is __________ case. Experiments have been __________ in which individual electrons __________ protons have been weighed. __________ experiments show that the __________ of the electron is __________ than that of a __________ by a factor of __________.

This means that most __________ the mass of the __________ must be furnished by __________ nucleus. However, the mass __________ the nucleus is not __________ by the number of __________ alone. For example, a __________ nucleus has two protons __________ a hydrogen nucleus has __________ proton. Yet a helium __________ is measured to be __________ times heavier than a __________ atom. What can be __________ composition of the helium __________? A partial answer to __________ problem was obtained when __________ third particle, the neutron, __________ discovered. The neutron carries __________ charge; it is a __________ particle. Its mass is __________ identical to the mass __________ the proton. Thus the __________ of the helium atom __________ consist of two neutrons __________ two protons. Then its __________ will be 2+ but __________ mass will be four __________ the mass of the __________ atom.

Now our nuclear __________ suffices. We can build __________ the atoms for all __________. Each atom has a __________ consisting of protons and __________. The protons are responsible __________ all of the nuclear __________ and part of the

AGRICULTURE AND THE RISE OF CIVILIZATION

__________ communities, with houses, public __________, governments, laws, and written __________, could not arise until __________ had solved the problem __________ staying in one place. __________, agriculture was, and is, __________ for civilization. A second __________ for civilization is organization __________ division of labor. According __________ all of our records, __________ first organizations of this __________ began under the direction of __________ a powerful leader. One __________ of gaining power over __________ men was by owning __________. Hence, when land became __________ source of food through __________, the head of a __________ family could marry his __________ and daughters into other __________ families, so that his __________ or most agressive son __________ control more property, and __________ on. Fathers or leaders __________ large families thus became __________ "kings." About these rulers __________ grouped soldiers, priests, tradesmen, __________, and others. By conquering __________ people, they acquired large __________ of slaves who built __________, palaces, temples, and pyramids. __________ this way were born __________ first great civilizations, in __________, Mesopotamia, and the Indus __________ of western India.

You __________ see from this brief __________ of man's rise that __________ change from the savage, __________ Age type of existence __________ modern civilization took only __________ tiny fraction of the __________ of time needed for __________ to evolve from his __________ ancestors. Furthermore, if we __________ in order the various __________ that gave man his __________ control over nature, we __________ they have been made

TAKING RESPONSIBILITY FOR GOVERNING

The party in office __________ held responsible by the __________ for running the government __________ for the achievement of __________ party's program. If a __________ President and Congress have __________ elected, they are considered __________ for laws passed and __________ taken, even though many __________ these laws and actions __________ have been supported by __________ Republicans. Thus, the Democrats __________ the praise and blame (__________ on the point of __________) for the New and __________ Deal programs. The Republican __________ Congress and President Eisenhower __________ held responsible for legislation, __________ though much of President __________ program was supported by __________ Democrats.

Not infrequently, however, __________ legislative and executive branches __________ government are controlled by __________ parties. This was the __________ during two years of __________ Truman administration and during __________ of Eisenhower's eight years __________ the White House. Divided __________ is found even more __________ the state level.

For __________ person who prefers things __________ remain pretty much as __________ are, believing that governmental __________ is generally better than __________ new programs, the matter __________ divided responsibility may be __________ virtue. At least one's __________ party can veto the __________ action which the opposing __________ might take. Many political __________, however, decry divided responsibility. __________ contend that voters elect __________ to carry out programs __________ will meet society's needs. __________ required action is costly __________ frustrating. Part of the __________ to the problem of __________ responsibility lies in educating __________ to the folly of __________ an executive of one __________

BUILDING PROTEIN MOLECULES

The DNA and RNA __________ a cell are closely __________. We have already seen __________ the structure of RNA __________ similar to that of __________. What else do biologists __________ about RNA? All cells __________ have been examined contain __________, but some cells contain __________ more than others. Those __________ with much RNA carry __________ much protein synthesis. The __________ in higher animals that __________ digestive enzymes, for instance, __________ large quantities of protein. __________ amounts of RNA are __________ in the cells of __________ organs. Certain glands of __________ silkworm also contain striking __________ of RNA, and these __________ the glands that produce __________ protein, silk. For these __________ it is thought that __________ plays an important role __________ protein synthesis.

The preceding __________ of this chapter described __________ biochemists were able to __________ the biological code contained __________ RNA. How are the __________ abilities of RNA related __________ the DNA of the __________?

Biologists believe that the __________ instructions to the cell __________ coded in the DNA __________ the nucleus. Although DNA __________ the library of instructions, __________ cannot act directly in __________ many chemical reactions of __________ cell. There is a __________ simple reason for thinking __________ this is so. In __________ cells the DNA is __________ in the nucleus, whereas __________ cell activities occur in __________ cytoplasm. DNA must therefore __________ indirectly in most cells.

__________ the instructions coded in __________ must be carried into __________ cytoplasm where the work __________ the cell actually goes __________.

THE STRUCTURE OF THE ATOM

For almost three quarters __________ a century scientists have __________ accumulating evidence about the __________ of atoms. Some of __________ evidence has come from __________ study of radioactive elements __________ radium and uranium. The __________, the X-ray tube, and __________ modern electric devices for __________ the structure of atoms __________ given additional information. At __________ present time scientists recognize __________ atoms are not simple __________ particles. Instead, they are __________ to be composed of __________ different kinds of still __________ particles arranged in a __________ complex way.

An atom __________ of two main parts. __________ positively charged central part __________ called the nucleus. It __________ very small and very __________. Its diameter is about __________ cm, or 10^{-5} Å. __________ is about one one-hundred-thousandth __________ the diameter of the __________ itself, since atoms range __________ 1Å to 5 __________ in diameter.

Negatively charged __________, called electrons, move about __________ nucleus in more or __________ definite regions called shells __________ energy levels. About 1913 __________ Danish scientist Niels Bohr (__________) pictured the movement of __________ about the nucleus of __________ atom as similar to __________ rotation of the planets __________ the sun. However, the __________ of the electrons are __________ known to be much __________ definite than the orbits __________ the planets. Electrons move __________ the nucleus of an __________ much as bees move __________ in the area near __________ hive. Sometimes the electrons __________ near the nucleus, sometimes __________ are farther away. By __________ seemingly haphazard motion the __________

PETER'S REFORMS

The reforms that Peter __________ Great believed in and __________ to introduce changed the __________ of Russian history. To __________ for himself what Europe __________ like he journeyed there __________ person, and hired shipbuilders, __________, weavers, and other skilled __________ to come to Russia. __________ he was away some __________ his regiments at Moscow __________, and on his return __________ punished the rebels mercilessly, __________ and killing hundreds of __________. Throughout his reign he __________ to fight resistance and __________. The clergy of the __________ Orthodox Church opposed the __________ he made and denounced __________ for employing "heretics" from __________ Protestant countries. Reports __________ among the Russian people __________ he was the great "__________," the Antichrist, foretold in __________ Book of Revelation. When __________ learned that his own __________ Alexius had plotted against __________ he had Alexius flogged __________ death. Nothing could turn __________ from his relentless purpose.

__________ plans to expand the __________ frontiers to the Baltic __________ the Black Sea involved __________ in wars with the __________ and the Turks. The __________ were famous soldiers with __________ weapons, and at first, __________ their daring young king, __________ XII, they defeated the __________ easily. Peter was not __________. "I know well that __________ Swedes will beat us __________ a long time," he __________, "but, at last, they __________ teach us how to __________." He was right. His __________ with Sweden, the Great __________ War, dragged on for __________ years. In 1708 Charles __________ Russia with his Swedish __________

THE UNITED STATES MOVES TOWARD WAR

__________ the outbreak of the __________ in Europe most Americans __________ with Great Britain and __________. They believed that Germany __________ be defeated and that __________ United States should stay __________ of the struggle. Isolationist __________ was still strong. As __________ won victory after victory, __________ changed their attitude. In __________, 1939, Congress amended the __________ Act to permit belligerent __________ to buy munitions on __________ cash-and-carry basis. The change __________ Britain and France, since __________ needed our munitions. The __________ of France made Americans __________ the importance of Great __________ to the defense of __________ Western Hemisphere. Hence the __________ States decided to give __________ all aid "short of __________." In September, 1940, our __________ transferred fifty over-age destroyers __________ Great Britain in return __________ the use of naval __________ air base sites in __________, British Guiana, and the __________ Indies. When England no __________ had money to pay __________ imports, Congress passed the __________ Act (March, 1941), which __________ for "lending" war supplies __________ Britain and other countries __________ were fighting the Axis. __________ American Navy began to __________ British ships part way __________ the Atlantic. The United __________ took control of Greenland __________ Iceland with the approval __________ the Danish government-in-exile. By __________ summer, the United States __________ was convoying British merchant __________ as far as Iceland. __________ November, 1941, Congress said __________ the lend-lease supplies could __________ delivered in American ships.

__________ acting as the "arsenal __________ democracy," the United States __________ to its own defenses.

THE ENERGY OF THE CELL

__________, as we have said, __________ its work by chemical __________. We have also said __________ the power to carry __________ this work comes from __________ energy. The most important __________ which supplies this chemical __________ to cells is glucose. __________ is broken down in __________ process of respiration.

If __________ is simply burned up, __________ will give off heat, __________ this heat could not __________ used to do the __________ work. Instead, the cell __________ apart the glucose molecule __________ step at a time. __________ glucose molecule has six atoms in it. During __________ it is changed to __________ kind of molecule after __________ until it ends up __________ molecules with only one __________ atom in them. These __________ carbon dioxide molecules (CO_2).

__________ time one of these __________ is changed into another, __________ is released. This energy __________ now allowed to escape __________ heat. Instead the energy __________ used to build up __________ special phosphorus compound called __________ its initials ATP. Later __________ energy stored in the __________ can be used whenever __________ is needed to do __________ work of the cell. __________ of ATP as the __________ carrier of the cell. __________ carbon and hydrogen in __________ glucose are gotten rid __________ by combining them with __________. This means that the __________ products of glucose respiration __________ carbon dioxide and water. __________ is needed in the __________, but carbon dioxide is __________ waste and must be __________. Some cells do not __________ oxygen at all. They

THE SECOND WORLD WAR BEGINS

__________ Second World War begin __________ September, 1939, with the __________ invasion of Poland. At __________ time Germany was ruled __________ a dictator, Adolf Hitler. __________ man had risen to __________ in 1933. The German __________ established after the First __________ War had not succeeded __________ well in giving Germany __________ prosperity the people hoped __________. The depression which had __________ in 1929 had brought __________, confusion, and hardship. Hitler, __________ the head of his __________, or National Socialist, party, __________ promised to bring prosperity. __________ had also promised to __________ the evils which he __________ had been perpetrated upon __________ by the Treaty of __________. Hitler had remilitarized the __________, overrun Austria, and occupied __________. Poland was next on __________ timetable.

In Italy was __________ dictator, Benito Mussolini. He __________ risen to power in __________. Just as Hitler had __________ own political party, so __________ had his, the Fascist __________. The two dictators in __________ made an alliance which __________ called the Rome-Berlin Axis. __________ was formed the same __________ in which Italy conquered __________. The methods of the __________ dictators were much the __________. Both built up their __________ forces and threatened their __________. Both took away the __________ of their people. They __________ the organization of labor __________ and of rival political __________. They built up propaganda __________ to control the ideas __________ their people. And they __________ of conquest and of __________ building. Italy joined Germany __________ the war at the __________ France was retreating before

PROTEINS IN VEGETABLES

__________ proteins in vegetables are __________ important to some people, __________ vegetarians, and so we __________ know of any changes __________ occur in the protein __________ vegetables when they are __________. You have already learned __________ protein compounds differ widely __________ properties. Because of this __________, they are affected differently __________ heating. Some of the __________ are soluble in water __________ therefore dissolve in the __________ in which the vegetables __________ cooked. Some proteins are __________ heat, either in __________ cells of the vegetable __________ in the water in __________ they are dissolved. This __________ of the coagulation of __________ by heat is important __________ remember, for most kinds __________ proteins are affected in __________ manner. The cooking of __________ is complicated because they __________ generally mixed with other __________ nutrients that require different __________ to make them ready __________ digestion. For example, the __________ foods which contain protein, __________ as wheat flour, corn, __________, and peas, also contain __________ large proportion of starch. __________ we have learned that __________ are made soluble by __________, and thus are more __________ digested. Then how are __________ vegetable foods to be __________? The guiding principle should __________ that vegetables containing both __________ nutrients should not be __________ long. Also, it is __________ to cook them in __________ that is relatively soft, __________ hard water contains calcium __________ magnesium salts which unite __________ the protein called legumin __________ form insoluble compounds that __________ very difficult to digest. __________ these principles are adhered

STOCK EXCHANGES

It was easy to __________ purchasers for the shares __________ joint-stock companies after they __________ paid handsome profits, but __________ was always a risk __________ be taken with new __________. Many joint-stock companies did __________ make the great profits __________ of them. Many companies __________ in bankruptcy. The value __________ shares in joint-stock companies, __________, varied a good deal.

__________ people with money made __________ business of trying to __________ shares when they were __________ and sell them when __________ went up in price. __________ of shares was done __________ certain places called stock __________. The man who wished __________ sell could almost always __________ someone at the exchange __________ was willing to buy. __________ were split into small __________ so that even landlords __________ small shopkeepers who knew __________ of foreign trade were __________ to invest their savings __________ shares of stock. The __________ with which shares in __________ joint-stock companies could be __________ or sold on the __________ exchange helped merchants obtain __________ capital needed for oceanic __________.

Indeed, it became too __________ to sell stock. Because __________ the large profits paid __________ a few concerns such __________ the British East India __________, the price of their __________ rose rapidly in London __________ before 1720. People began __________ buy all kinds of __________ in hope of selling __________ at a higher price. __________ company was started to __________ people against death from __________ drinking, and one "for __________ undertaking which shall in __________ course be revealed," the __________

DRUGS AGAINST DISEASE

For thousands of years, __________ has used drugs in __________ attempt to cure infectious __________. Most of these drugs __________ mixtures of wild plants __________ few were of any __________. It is difficult to __________ a drug that will __________ microbes in the living __________. If it can kill __________, the drug is usually __________ strong that it will __________ kill the cells of __________ body.

Scientists struggled with __________ difficult problem of finding __________ drugs for many years, __________ at first they had __________ little success. One chemist, __________ 606 attempts, discovered a __________ that would act against __________ germs of syphilis in __________ body. A number of __________ drugs were developed to __________ the one-celled animals that __________ human diseases. These drugs __________ very valuable, although sometimes __________ had harmful effects on __________ body cells.

It was __________ until 1932 that a __________ useful drug for destroying __________ inside the body was __________. A German chemist developed __________ red dye that would __________ germs in the bodies __________ animals without harming the __________ themselves. He had not __________ his experiments when he __________ told that his own __________ was seriously ill. Bacteria __________ entered her blood stream __________ the doctors could do __________ to save her. The __________ gave her a large __________ of the red dye __________ in a short time __________ was on the road __________ recovery.

Chemists working with __________ red dye found that __________ active substance in it __________ a white powder called

PRICE CONTROL: CONSTITUTIONAL HISTORY

When, during World War __________, American agriculture was called __________ to provide for the __________ of allied countries whose __________ were overrun by armies, __________ boomed. So did income. __________ overextended themselves buying new __________, new stock, new equipment __________ blown-up prices.

The collapse __________ the foreign market when __________ war ended knocked the __________ out of prices and __________ debt-ridden farmers could not __________ their obligations. There was __________ hardship. An accepted definition __________ a farm came to __________ "a portion of land __________ covered by a mortgage." __________ depressed condition continued throughout __________ 1920's even while the __________ of the economy was __________ so-called prosperity.

After the __________ Depression set in the __________ had more company in __________ economic misery, but was __________ better off. The New __________ introduced a series of __________ to lift farm prices __________, although mended, remain effective __________ today.

First, an Agricultural __________ Act (AAA) was passed __________ 1933. The plan was __________ raise a fund by use of a "processing __________" on farm products, the __________ to go to those __________ who cooperated in reducing __________. By raising less food, __________ would go up. No __________ ever invited such hostility __________ ridicule. To many people __________ seemed wrong to kill __________ third of the young __________ and plow under every __________ row of cotton while __________ were still people in __________. But the Supreme Court __________ short the experiment. In __________ it pronounced it unconstitutional - __________ because it levied a __________

PROPERTIES OF SULFUR

Lumps of sulfur are __________ and brittle. They can __________ melted and cast into __________, or roll, form. Another __________ form of sulfur is __________ flowers of sulfur. This __________ soft yellow powder.

__________ is about twice as __________ as water, insoluble in __________, soluble in carbon disulfide (__________$_2$), a non-conductor of electricity, __________ has no marked odor.

__________ some sulfur into a __________ tube and heat it __________. When the sulfur reaches __________ C, it forms a __________, straw-colored liquid. When the __________ is raised, the liquid __________ darkens to amber color __________ thickens. At about 160° __________, the test tube can __________ inverted, and the sulfur __________ not run out. The __________ is now like thick, __________ tar. At a higher __________ it is liquid again. __________ it boils at 444.6° __________.

When the sulfur is __________, some of the vapor __________ in the form of __________ yellow powder (flowers of __________) on the cooler walls __________ the test tube. Hot __________ burns with a blue __________ when it reaches the __________. Sulfur dioxide (SO_2), a __________ gas that has a __________, choking odor, is formed.

__________ melted sulfur is quickly __________ by pouring it into __________ water, a dark, sticky __________ of plastic sulfur forms __________ resembles smoked rubber. Plastic __________ can be molded into __________ desired shape while it __________ warm. It hardens into __________, dark mass, which __________ becomes yellow again long __________ it has colled.

These __________ changes in physical properties __________

CAUSES OF INEQUITABLE REPRESENTATION

__________ representation has grown through __________ failures of government. First, __________ those legislatures where one __________ both houses are elected __________ a basis roughly of __________ member per county, such __________ in California, a distortion __________ representation is bound to __________. More people live in __________ counties than rural, and __________ a result the city __________ counts for less.

__________, many states have failed __________ redistrict as their population __________ shifted, leaving rotten boroughs __________ through the state. For __________, Mississippi has not changed __________ districts since 1890, Delaware __________ 1897, Tennessee since 1900, __________ Illinois since 1901.

Third, __________ many states the redistricting __________ has been corrupted by __________.

In most states, the __________ to redistrict or the __________ to gerrymandering has been __________ responsibility of the state __________ themselves. In these states, __________ legislators, who years ago __________ did represent the majority __________ the population, have been __________ reluctant to change the __________ of the legislature in __________ of growing urban population, __________ only because they did __________ relish the prospect of __________ themselves out of their __________. Not only the individual __________ the political party is __________; rural legislators (in two-party __________) are frequently Republican, urban __________ are frequently Democratic; and __________ has been too much __________ expect one party to __________ itself into a minority.

__________ some areas, rural Republicans __________ been supported by conservative __________ interests in the cities, __________ prefer a Republican legislature, __________ of origin, over a __________ legislature more responsive to

THE PARTS OF THE BRAIN

__________ large upper portion of __________ brain is called the __________ (sĕr'ê-brŭm). It is divided __________ two hemispheres, which are __________ by a mass of __________ fibers. The other surface __________ the cerebrum, which is __________ called the cortex (kôr'tĕks), __________ composed of gray matter, __________ up of the cell __________ of neurons. The interior __________ the brain is formed __________ of nerve fibers and __________ white because of the __________ sheaths of these fibers. __________ activity, such as voluntary __________, memory, and reasoning, is __________ to be controlled by __________ cortex. Thus "gray matter" __________ commonly referred to as __________ equivalent of intelligence. Since __________ activity seems to take __________ largely in the cortex, __________ area of the cortex __________ more important than the __________ of the brain as __________ whole. Its area is __________ by many deep folds, __________ convolutions, in the surface __________ the brain. The more __________ deeper the convolutions, the __________ will be the area __________ the cortex. In general, __________, the intelligence of an __________ is closely related to __________ convolutions in its brain. __________ has a more complex __________ of convolutions than any __________ animal.

The cerebellum (sĕr'ê-bĕll'ŭm), __________ the "hind brain," lies __________ the cerebrum. It is __________ divided into two hemispheres __________ is covered with gray __________ under which are white __________. This part of the __________ is the center of __________ coördination. Damage to the __________ results in muscle movements __________ are jerky and ineffective. __________ cerebellum also controls muscular

FARADAY AND SOLUTIONS

__________ former times, just as __________ present, people have attempted __________ understand matter. By the __________ of the 18th century __________ had a good idea __________ gases and how they __________, but liquids troubled them __________ much. One of the __________ problems facing early chemists __________ the strange behavior of __________ when in solution. Why, __________ example, does a sodium __________ solution conduct electricity, while __________ sugar solution does not? __________ does hydrochloric acid permit __________ flow of electricity better __________ does acetic acid? Why __________ distilled water not conduct __________ while tap water does? __________ do the boiling and __________ points of a solution __________ when its concentration changes?

__________ the beginning of the century Michael Faraday of __________ became interested in these __________. Through numerous experiments he __________ up a systematic knowledge __________ solutions, part of which __________ now called Faraday's Law __________ Electrolysis. He found that __________ he passed the same __________ of electrical charge through __________ of different compounds, the __________ of the different elements __________ at the terminals were __________ to their atomic weights.

__________ 1833 Faraday published a __________ on his researches into __________ conductivity of solutions. This __________ included the law just __________, and it also introduced __________ terminology of electrolysis which __________ today. Thus it was __________ who gave us the __________ electrode to represent the __________ terminal entering a solution. __________ first used the word __________ to describe a solution __________ permits a current of __________ to pass through it.

GOVERNMENT OF INDIA ACT OF 1935

__________ conferences to find a __________ solution to the problem __________ held in London in __________ early 1930's. Gandhi himself __________ present at one of __________. These meetings revealed one __________ the chief difficulties of __________ Indian question to be __________ fear of the Moslem __________ that it would not __________ equal rights with the __________.

In 1935 Parliament enacted __________ new constitution for India. __________ was put into operation __________ 1937. This Government of __________ Act declared India to __________ a federation of Indian __________ (ruled by their princes) __________ governors' provinces. At the __________ of the federal government __________ the governor, or viceroy, __________ by the crown. The __________ was to be assisted __________ a council of ministers, __________ of the various departments __________ the government.

The federal __________ was composed of two __________, a Council of State __________ a Federal Assembly. Each __________ representatives of the provinces __________ of the princely states. __________ local affairs of the __________ states were left to __________ rulers. The governors' provinces __________ legislatures, part of whose __________ were elected by the __________.

The extreme nationalists still __________ absolute independence, although the __________ were willing to accept __________ status. The Indians insisted __________ they had a right __________ govern their own country. __________ British held that by __________ of the differences in __________, religion, language and cast, __________ the general illiteracy of __________ people, India was not __________ able to manage its __________ affairs. India, if left __________ herself, they said, would

THE ANCIENTS BELIEVED THE WORLD MADE OF "FOUR ELEMENTS"

But to return to __________ original question: What is __________ world made of? Guesses __________ speculations would be useless __________ attempting to answer this __________. Because the ancients depended __________ upon these procedures and __________ upon inaccurate and uncontrolled __________ and observation, they made __________ progress in answering the __________.

After Thales had suggested __________, another man proposed that __________ might be another of __________ basic substances from which __________ matter was made. Fire, __________, was suggested and later __________. Pythagoras (pĭ-thăg'ō-răs), an ancient __________ thinker and mathematician who __________ about 600 B.C., __________ thought to have been __________ first European to express __________ idea that all matter __________ composed of these "four __________."

These conclusions seemed to __________ proved by the observations __________ the early investigators. When __________ stick of green wood __________ burned, they saw that __________ was produced, water was __________ out and boiled off __________ the ends of the __________, a smoky vapor (air) __________ given off, and an __________ (earth) was left behind. __________ concluded, therefore, that all __________ was made up of __________ amounts of two or __________ of these four basic, __________ elementary, substances.

The Greek __________, however, made a serious __________. They failed to make __________ observations of different substances. __________ did not make enough __________. Consequently, their conclusions were __________. Strangely enough, the idea __________ all matter is composed __________ "four elements" (earth, air, __________, and water) persisted until __________ eighteenth century and was __________ correct by many otherwise __________

FOREIGN AGGRESSION FURTHERED JAPANESE AMBITIONS

In becoming a modern __________ nation, Japan also became __________. A rapid rise in __________ had resulted from improved __________ and better medical services. __________ the Meiji Era alone, __________ expanded from less than __________ to over 50 million. __________ nation could not produce __________ food for its people. __________ also lacked raw materials __________ needed markets for its __________. Japan looked to the __________ mainland as a solution __________ its difficulties. As early __________ 1876 the Japanese obtained __________ privileges in Korea. It __________ such transactions that irritated __________ Chinese and precipitated the __________ War of 1894-1895. By __________ China, Japan made its __________ significant acquisition of territory __________ its own borders.

The __________ of Shimonoseki granted Japan __________ only Formosa and the __________ but also the Liaotung __________ of Manchuria, which jutted __________ into the Yellow Sea. __________ Russians, pursuing their own __________ policy of imperialist expansion __________ Manchuria, had long desired __________ because at its southern __________ lay Port Arthur, one __________ the finest year-round harbors __________ the Far East. Backed __________ France and Germany, Russia __________ Japan to return Liaotung __________ China, and shortly afterward __________ the peninsula and harbor __________ itself through a treaty __________ China. This move angered __________ Japanese, as did Russian __________ in Korea.

Negotiations between __________ and Russia over Korea __________ Manchuria broke down in __________. Fighting began when Japan, __________ a formal declaration of __________, attacked the Russian fleet __________ Port Arthur. Much to __________ surprise of the West, __________

WATER AND MINERALS FROM ROOT TO LEAF

In the daytime, in __________, sunny weather, a wet __________ suit dries quickly. The __________ in it evaporates. Water __________ from plant leaves, too, __________ such weather. Evaporation from __________ is called transpiration. In __________ living plant the water __________ are filled with water __________ all times, from the __________ of the roots to __________ veins in the leaves. __________ takes water out of __________ leaf cells, lowering the __________ of water in the __________. Water then diffuses into __________ cells from xylem in __________ veins. The veins are __________ full by diffusion of __________ from the soil into __________ roots. While transpiration takes __________ in the leaves there __________ a continuous stream of __________ upward through the roots __________ stem with its branches. __________ goodsized birch tree may __________ as much as 350 __________ of water on a __________, dry day. A single __________ plant may lose three __________ four quarts of water __________. If the plant is __________ live, all that is __________ must come in through __________ roots.

You can now __________ why plants must be __________ carefully when they are __________. Parts of the roots, __________ the root hairs, are __________ in digging the plant. __________ all the leaves are, transpiration continues at the __________ rate as before, but __________ can't get into an __________ root system at that __________. Do you see why __________ usually "cut back" the __________ of a plant when __________ transplant it? This slows __________ transpiration.

Biologists have long __________

SALES TAXES

Thirty-two out of forty-eight __________ in this country collect __________ general sales tax. This __________ is the major source __________ revenue for most of __________ states. Some cities also __________ a sales tax. At __________ times it has been __________ that the federal government __________ also enact a sales __________ as a means of __________ more money. However, up __________ now, Congress has never __________ such a tax law __________ the federal government.

A __________ tax is easy to __________. At the time of __________ a purchase in a __________ store, the consumer pays __________ regular price charged by __________ merchant. Then, he also __________ a small percentage of __________ regular price as an __________ tax payment. The merchant __________ as a tax collector. __________ keeps a record of __________ amount of taxes he __________, and he turns this __________ over to the treasury __________ the state or city __________ has enacted the sales __________ law.

Some people object __________ the sales tax as __________ regressive tax. They believe __________ burden of taxation falls __________ heavily on poor families __________ it does on wealthy __________. This is true because __________ families spend almost all __________ income on food, furniture, __________ clothing. Wealthy families on __________ other hand do not __________ all their income on __________ immediate necessities of life. __________ save part of their __________ and invest it or __________ it on things not __________ in retail stores. Therefore, __________ pay a smaller total __________ of their incomes as __________.

PROGRAMS TO EXCHANGE PERSONS

__________ need to exchange people __________ other countries. This is __________ than just exchanging tourists __________ are sightseeing, having fun, __________ simply loafing in strange __________. We need a serious __________ of students, teachers, doctors, __________, authors, musicians, farmers, labor __________, athletes, dancers, engineers, and __________ people who study and __________, perform and observe. "Breaking __________ the barriers that divide __________ people from those of __________ nations and building in __________ stead avenues for cooperation __________ the free interchange of __________ and skills are the __________ purposes of international educational __________ activities."

Since World War __________, Congress has authorized several __________ programs to promote educational __________. Probably the best known __________ the ones provided by __________ Fulbright Act (1946) and __________ Smith-Mundt Act (1948). The __________ Act is primarily for __________ purpose of aiding American __________ and scholars to teach __________ study in certain approved __________. Russia, Poland, and the "__________ curtain" countries are excluded. __________ Smith-Mundt Act created the __________ States Information Agency (USIA), __________ maintains offices in foreign __________ to dispense information about __________ country.

The International Educational __________ Program, also created by __________ Smith-Mundt Act, in a __________ year brought 4,146 people __________ more than seventy-five foreign __________ to visit, teach, and __________ in our country. More __________ 1,700 of these visitors __________ students. The Program provided __________ for young people of __________ countries to study in __________ schools abroad. We sent __________ Americans abroad under this __________. Among them were some __________ students, who studied in

COTTON

__________ is the soft, white __________ obtained from the cotton __________. The fibers are long, __________ cells attached to the __________ seeds. The seeds and __________ are formed in a __________ called a boll, which __________ open when the cotton __________ ripe.

The cotton and __________ are picked from the __________ by hand or by __________ and taken to a __________ gin, where seeds and __________ are separated. The cotton __________ go to a mill __________ cleaning, carding, and spinning __________ thread. The seeds are __________ to produce cottonseed oil, __________ is used to make __________ fats and margarine. The __________ meal which remains is __________ as food for cattle.

__________ is produced in large __________ in the United States, __________, Egypt, and Brazil. In __________ and other countries, cotton __________ spun into thread and __________ into cloth. Some varieties __________ cloth made from cotton __________ lawn, muslin, denim, broadcloth, __________ calico, and cambric.

Under __________ microscope, cotton fibers appear __________ be a flattened, twisted __________. Chemically, cotton is almost __________ cellulose, ($C_6H_{10}O_5$). The subscript "__________" tells us that the __________ unit is repeated an __________ number of times. When __________ comes from the plant, __________ is creamy-white. It is __________ with chlorine or hydrogen __________ to make it pure __________.

If cotton is soaked __________ strong, cold sodium hydroxide __________ a few minutes and __________ washed and dried, it __________ mercerized cotton. Mercerized cotton __________ a better luster than __________. It is also stronger __________ dyes better than untreated

AN EVALUATION OF BRITISH AND AMERICAN STRENGTH

__________ as its words were, __________ Declaration of Independence along __________ not guarantee independence. If __________ United States (the thirteen __________ colonies) were to be __________, the Revolutionary War would __________ to be won. The __________ of patriots would be __________ to give life to __________ new country.

Fortunately for __________ Americans, there were men __________ to make sacrifices. Men __________ Tom Paine, whose pamphlets __________ to fan the sparks __________ revolution; Benjamin Franklin, who __________ with distinction as American __________ to France; the Frenchman __________ de Lafayette, the German __________ von Steuben, the Pole __________ Pulaski, who came to __________ from Europe to fight __________ liberty; and George Washington, __________ led the ragged and __________ American troops through what __________ Paine called "times that __________ men's souls."

The odds __________ victory seemed to favor __________ British. They had the __________ advantages: (1) Their army __________ better trained than the __________ troops. (2) Their navy __________ far more powerful than __________ ships available to the __________. (3) They had the __________ necessary to hire mercenary __________ (paid professional soldiers, such __________ the Hessians) to fight __________ them. (4) They retained __________ loyalty of many colonists.

__________ the other hand, the __________ had these advantages: (1) __________ war was being fought __________ their home grounds, while __________ British were many miles __________ England. (2) They had __________ effective leadership of Washington __________ other men whose tactics __________ proved superior to those __________ British generals. (3) They __________ the eventual support of

CONVERGENT EVOLUTION

__________ have noted that species (__________.g. bird and bat, __________ and fish, woodchuck and __________) are sometimes found which __________ each other superficially but __________ to reveal the homologies __________ would indicate close kinship. __________ as a result of __________ two species of different __________ come to resemble one __________ closely is termed convergent __________. It can be explained __________ the basis of the __________ forces of natural selection __________ in a similar way __________ two originally different phenotypes. __________ are certain structural and __________ requirements that must be __________ before any organism, no __________ what its ancestry, can __________ or swim.

Convergent evolution __________ in no sense the __________ of speciation. While two __________ species may come to __________ one another closely as __________ selective forces work on __________, each species is, at __________ same time, diverging from __________ own ancestral stock. The __________ Australian marsupials which resemble __________ mammals in both appearance __________ habits illustrate convergent evolution __________ respect to the placental __________. With respect to the __________ marsupials, however, they represent __________ most dramatic example of __________ radiation, in other words, __________ multiplication of species.

The __________ of evolution is the __________ important generalization about living __________ that has been made. __________ the last chapter we __________ some of the kinds __________ evidence that can best __________ explained by a theory __________ evolution. In this chapter __________ have examined the mechanism __________ which evolutionary change is __________ to occur. Now let __________ round out the story

PARTY AND CONSTITUENCY IN THE UNITED STATES

Writing in Parliamentary Affairs __________ decade ago, Professor Charles __________ Merriam said that the __________ States had 49 party __________. Since that time, only __________ number has changed. Now, __________ are 51 party systems--__________ federal and 50 state, __________ to mention the countless __________ in cities and counties. __________ is no national party __________ with authority to issue __________ to state and local __________, to discipline them, to __________ the formulation of their __________, or to the direct __________ of their members who __________ public office. A major __________ the in the United can best be defined __________ a quadrennial federation of __________ state parties. This is __________, of course, to the __________ system, which not only __________ governmental power between the __________ and the Nation but __________ makes the 50 states __________ 50 separate constituencies. Governors __________ Senators are elected in __________ state. Each member of __________ national House of Representatives __________ elected in a constituency, __________ boundaries have been determined __________ the legislature of his __________ state. Even the President __________ Vice-President are chosen by __________ electors who are elected __________ each state. Consequently, in __________ to win elections, a __________ party organization must be __________ to its own state __________ to the various social __________ that dominate or hold __________ balance of power in __________ particular state.

Both federalism __________ the party systems are __________ products of the American __________. The United States is __________ by geography, by memories __________ the Civil War, by __________

BRONZE TOOLS

The Bronze Age dawned __________, about four thousand years __________. People did not throw __________ their old stone tools __________ and begin to use __________ ones. Moreover, the Bronze __________ did not spread rapidly __________ all parts of the __________. Many people were still __________ the Stone Age when __________ discovered America, and in __________ parts of the world __________ tribes were still in __________ Stone Age at the __________ of the twentieth century. __________ bronze came to __________ used widely in any section of the world, __________ say that those people __________ living in the Bronze __________.

The use of metal __________ an important step forward __________ a higher level of __________. The new tools opened __________ many possibilities for him. __________ metal weapons with stone __________ and you will realize __________ much more efficient man __________ be with his bronze __________. They helped bring him __________ the doorway of civilization.

__________ the dawn of civilization, __________ had learned much. Lacking __________ means of protection that __________ animals had, he had __________ his superior wits and __________ become in a real __________ the master of his __________. He had learned speech, __________ use of fire, the __________ of bronze weapons. He __________ learned to __________ and reap, to cook __________ food, to sew, to __________, to build houses for __________, and to dig out __________ log and use it __________ a boat.

Among these __________

THE CHANCES OF FOSSIL FORMATION

The number of organisms __________ are fossilized after death __________ a very small percentage __________ all the organisms that __________ ever lived. You have __________ noticed that the conditions __________ which fossils are formed __________ very rigid. After death __________ organisms do not encounter __________ conditions.

Most land animals __________ eaten by scavengers or __________ decay too rapidly to __________ fossils. There are probably __________ fossil remains of the __________ of millions of bison __________ ranged the Great Plains __________ hundreds of years. The __________ land plants or animals __________ have formed fossils are __________ that have been in __________ conditions after death, such __________ freezing in glaciers, falling __________ bogs or swamps where __________ proceeded slowly to produce __________ or petrifaction, or being __________ in tar pits or __________.

Water plants and animals __________ more apt to form __________, since after death they __________ to the bottom of __________ body of water in __________ they live. Here in __________ sediments they encounter slow __________ and sedimentation, conditions favorable __________ fossil formation.

Ocean sediments __________ the shore have provided __________ greatest number of fossils. __________ is abundant in shallow __________ waters, and the sediments __________ the shore are constantly __________ so that the bodies __________ dead organisms are quickly __________.

You can see that __________ chances that any particular __________ will become a fossil __________ death are very slight. __________ chances that we will __________ a fossil after it __________ formed are equally slight.

__________ a very small amount __________

SYNTHETIC RUBBER, SILICONES

Perhaps you have seen __________ dry their hands with __________, or violinists rub their __________ over the same kind __________ substance.

For generations mankind __________ found many ways for __________ the different substances known __________ resins. These are hard, __________, noncrystalline solids which are __________ in water but soluble __________ many organic solvents. They __________ either softened or melted __________ heat. The resins include __________ materials as resin from __________ turpentine pine trees; amber, __________ fossil resin from cone-bearing __________; copal and kauri, resins __________ are useful in making __________; and lac, the secretion __________ an insect, from which __________ is made.

As uses __________ natural resins increased, the __________ became inadequate and chemists __________ interested in the production __________ synthetic resins, now commonly __________ plastics. These materials resemble __________ resins in appearance and __________. The names "resin" and "__________" at one time were __________ interchangeably. Strictly speaking, however, __________ are brittle while plastics, __________ the name implies, may __________ molded or pressed into __________ forms under heat, or __________, or both. A plastic __________ has a larger molecular __________ than a resin; many __________ the plastics soften when __________, but they do not __________ liquid. Heated resins form __________ with relatively low viscosities.

__________ plastics are continually being __________. A careful control of __________ makes it possible to __________ a plastic which will __________ perfectly adapted to the __________ use. An almost limitless __________ of plastics can be __________, and it is now __________ to make an astounding __________

Textbooks Sampled for Study I

Textbooks Sampled

Biology

Baker, A. O., Mills, L. H., and Tanczos, J. "The Parts of the Brain," New Dynamic Biology. New York: Rand McNally and Co., 1959.

Biological Sciences Curriculum Study. "The DNA and RNA of a Cell are Closely Related," Biological Science: Molecules to Man. Blue version. Boston: Houghton Mifflin Co., 1963.

Biological Sciences Curriculum Study. "Agriculture and the Rise of Civilization," Biological Science: An Inquiry Into Life. Yellow version. New York: Harcourt, Brace, and World, Inc., 1963.

Curtis, F. D., and Urban, J. "Protoplasm," Biology: The Living World. New York: Ginn and Co., 1958.

Eisman, L., and Tanzer, C. "Drugs Against Disease," Biology and Human Progress. New York: Prentice-Hall Inc., 1953.

Fitzpatrick, F. L., Bain, T. D., and Teter, H.E. "The Energy of the Cell," Living Things. New York: Holt, Rinehart, and Winston, Inc., 1962.

Heiss, E. D., and Lape, R. H. "The Chances of Fossil Formation," Biology: A Basic Science. New York: D. Van Nostrand and Co., Inc., 1961.

Kimball, John W. "Convergent Evolution," Biology. Palo Alto, California: Addison-Wesley Publishing Co., Inc., 1965.

Kroeber, E., Wolff, W. H., and Weaver, R. L. "Water and Minerals From Root to Leaf," Biology. Boston: D. C. Heath and Co., 1957.

Trump, R. F., and Fagle, D. L. "The Final Molecules," Design for Life. New York: Holt, Rinehart, and Winston, Inc., 1963.

Chemistry

Ahrens, M. R., Bush, N. F., and Easley, R. K. "Proteins in Vegetables," *Living Chemistry*. 2nd. ed. Boston: Ginn and Co., 1961.

Baker, P. S., and Bradbury, G. M., McGill, M. V., and Eichenger, J. W. "Synthetic Rubber: Silicones," *Chemistry and You*. Chicago: Lyons and Carnahan, 1962.

Brownlee, R. B., and others. "Faraday and Solutions," *Elements of Chemistry*. rev. by Boylan. Boston: Allyn and Bacon, Inc., 1962.

Chemical Education Material Study. "The Mass of an Atom and its Parts," *Chemistry: An Experimental Science*. San Francisco: W. H. Freeman and Co., 1963.

Dull, C. E., Metcalf, H. C., and Williams, J. E. "The Structure of the Atom," *Modern Chemistry*. New York: Holt, Rinehart, and Winston, Inc., 1962.

Fliedner, L. J., and Teichman, L. "Cotton," *Chemistry: Man's Servant*. Boston: Allyn and Bacon, Inc., 1961.

Garrett, A. B., Richardson, J. R., and Kiefer, A. "The Physical Properties of Water," *Chemistry: A First Course in Modern Chemistry*. Boston: Ginn and Co., 1961.

Jaffe, Bernard, "The Ancients Believed the World Made of Four Elements," *New World of Chemistry*, Morristown, N. J.: Silver Burdette Co., 1957.

Posin, D. Q., and Shampo, M. "Water is an Essential for Life," *Chemistry for the Space Age*. Philadelphia: J. B. Lippincott Co., 1961.

Weaver, E. C., and Foster, L. S. "Properties of Sulfur," *Chemistry for Our Times*. St. Louis: McGraw Hill Book Co., 1960.

American Government

Bailey, S. K., Samuel, H. D., and Baldwin, S. "Causes of Inequitable Representation," Government in America. New York: Holt, Rinehart, and Winston, Inc., 1957.

Brown, S. G., and Peltier, C. L. "The Judiciary and the Law," Government in Our Republic. New York: Macmillan Co., 1960.

Bruntz, G. G., and Bremer, J. "Taking Responsibility for Governing," American Government. Boston: Ginn and Co., 1965.

Burns, J. M., and Peltason, J. "Mr. Smith Runs for Congress," Government By the People. 5th ed. Englewood Cliffs, N. J.: Prentice-Hall Inc., 1963.

Flick, O. S., and Smith, H. "The Second World War Begins," Government in the United States. River Forest, Illinois: Laidlaw Brothers, 1956.

Rienow, R. "Price Control," American Government in Today's World. Boston: D. C. Heath and Co., 1959.

Silva, Ruth C. "Party and Constituency in the United States," Present Trends in American National Government. New York: Frederick A. Praeger, Inc., 1961.

Starratt, E. E., and Lewenstein, M. R. "Sales Taxes," Our American Government Today. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1958.

Warren, H. G., Leinenweber, H. D., and Anderson, R. "Programs to Exchange Persons," Our Democracy at Work. Englewood Cliffs, N. J.: Prentice-Hall Inc., 1963.

White, R., and Herman, I. "When Will Your Case be Tried?" American Government: Democracy at Work. Princeton, N. J.: D. Van Nostrand Co. Inc., 1963.

World History

Black, C. E. "Government of India Act of 1935," *Our World History*. Boston: Ginn and Co., 1965.

Boak, A. E. R., Slosson ,P. W., Anderson, H. R., and Bartlett, H. "What Was the Place of the Church in the Middle Ages?" *History of Our World*. Boston: Houghton Mifflin Co.

Bruun, G., and Haines, Millicent. "Peter's Reforms," *World Story*. Boston: D. C. Heath and Co., 1963.

Habberton, C. L., Roth, and Spears, W. "The Early Japanese People," *World History and Cultures: The Story of Man's Achievements*. River Forest, Illinois: Laidlaw Brothers, 1964.

Lane, F. C., Goldman, E. F., and Hunt, E. M. "Stock Exchanges," *World's History*. New York: Harcourt, Brace, and World, Inc., 1959.

Magenis, and Appel. "Bronze Tools," History of the World. New York: *American Book Co*., 1959.

Roehm, A. W., Buske, M. R., Webster, H., and Wesley, E. B. "The United States Moves Toward War," *Record of Mankind*. Boston: D. C. Heath and Co., 1965.

Roselle, Daniel. "An Evaluation of British and American Strength," *World History*. Boston: Ginn and Co., 1963.

Wallbank, T. W., and Schrier, A. "Foreign Agression Furthered Japanese Ambitions," *Living World History*. Chicago: Scott Forsman and Co., 1964.

Zebel and Schwartz. "The Role of the League of Nations," *Past to Present: A World History*. New York: Macmillan Co., 1960.

Cloze Tests for Redundancy Study III

THE SHINING METAL

Charles Hall had a __________ laboratory in his father's __________. He had made most __________ the laboratory equipment himself. __________ young man had remade __________ batteries. Now he could __________ electric current. He was __________ to do some experimenting.

__________ liked to study metals. __________ had read chemistry books. __________ had learned many facts. __________ wanted to do some __________ experiments. That was why __________ had remade the old __________. It was the reason __________ had made other laboratory __________.

Charles Hall knew that __________ metal could be changed __________ a solid. This change __________ be made by adding __________ certain chemicals to the metal. __________ mixture had to be __________. The heat would melt __________ chemicals. Then the chemicals __________ run together.

Next, this __________ mixture would be cooled. __________ would become solid.

Charles __________ read facts about alumina __________ his chemistry books. The __________ had stated that alumina __________ found in an ore. __________ ore was called bauxite. __________ believed alumina was a __________.

Some scientists discovered a __________ to make powdered alumina __________ a usable metal. The __________ metal was named aluminum. __________ the new metal took __________ and work. That made __________ more expensive than older __________ had been. Men knew __________ to make aluminum twenty __________ before Charles Hall tried __________. Not twenty-five tons of __________ had been made.

Charles __________ there was a large __________ of alumina in the __________. He decided to find __________ quick way to make __________. If the metal could __________ made quickly, it would __________be very expensive.

He __________ to find a way __________ dissolve alumina. He experimented __________ several chemicals. He decided __________ use cryolite. When cryolite __________ heated it became a __________. Charles Hall felt certain __________ liquid cryolite and heat __________ dissolve alumina.

Charles measured __________

THE SHINING METAL

Charles Hall had set __________ a chemistry laboratory in __________ father's woodshed. He had __________ most of the laboratory __________ himself. Now the young __________ had completed the remaking, __________ restoration, of old batteries __________ that electric current might __________ used. He felt that __________ last he was prepared __________ do some experimenting.

For __________ time the study of __________ and minerals appealed __________ Charles. When quite young, __________ had read books on __________. From books he had __________ many facts that had __________ his desire to carry __________ some laboratory experiments. It __________ then that he set __________ work on the restoration __________ old batteries and other __________ he needed.

One bit __________ information Charles Hall had __________ from a chemistry book __________ that a powdered metal __________ be changed into a __________. This change could be __________ by adding certain chemicals __________ the metal, then heating __________ mixture until both the __________ and the chemicals melted ran together. After this __________ mixture had cooled, it __________ be solid in form.

__________ the chemistry book, Charles __________ learned of a substance __________ alumina. The book stated __________alumina was found in __________ ore called bauxite and __________ scientists believed it was __________ metal.

After that chemistry __________ had been published, scientists __________ a method by which __________ alumina could be made __________ a usable metal. The __________ substance was named aluminum. __________ process used to make __________ required so much time __________ effort that this new __________ was more expensive than __________ older metals had been. __________ the twenty-year period previous __________ Charles Hall's interest in __________ with alumina, not twenty-five __________ of aluminum had been __________.

Charles knew that there __________ a large amount of __________ in the earth. He __________ determined to find a __________

THE PONY EXPRESS RIDER

"It's a pity you're __________ a little older, Billy," __________ George Chrisman. "I would __________ you a job as __________ Express rider. There's good __________ in it."

George Chrisman __________ the Western agent for __________ express company. That company __________ on the point of __________ a plan which many __________ thought was ridiculous. But __________ the other hand, everybody __________ the Mississippi River and __________ West Coast thought the __________ was fine. The Express __________ planned to maintain a __________ of fast riders for __________ regular carrying of the __________. The distance to be __________ was about two thousand __________. The route extended from __________ Missouri River to California.

__________ had been joking when __________ had spoken to Billy. __________ young William Cody, however, __________ a Pony Express rider __________ no joke.

"Oh, I __________, Mr. Chrisman, give me __________ chance at it!" was __________ plea. "I can ride _____ __________ well as any man--__________ know I can!"

"Sure, __________ can ride," replied his __________, good-naturedly. "But it takes __________ riding, Billy--it __________ sand!"

On the table __________ a St. Louis newspaper __________ contained the notice that __________ set the whole West __________. Chrisman handed it to __________ Cody so the boy __________ read it. This is __________ he read:

"To San __________ in 8 days by __________ Overland, California and Pike's __________ Express Company. The first __________ of the Pony Express __________ leave the Missouri River __________, April 3rd, at 5 __________ P.M., and it __________ run regularly weekly thereafter, __________ letter mail only. A __________ of departure on the __________ River will be in __________ contact with the East, __________ will be announced in __________ time."

The boy's eyes __________ as he said, "Oh, __________ me a chance at __________. Where is it to __________?"

THE PONY EXPRESS RIDER

"It's too bad you're __________ older, Billy," said George __________. "I'd give you a __________ as a rider. There's __________ pay in it."

Chrisman __________ the Western agent for __________ express company. The company __________ ready to carry out __________ plan. People living between __________ Mississippi River and the __________ Coast liked the plan. __________ said it was foolish.

__________ plan was for a __________ of fast riders to __________ mail. The distance to __________ covered was about two __________ miles. The route reached __________ the Missouri River to __________.

Chrisman had been joking __________ Billy. But being a __________ Express rider was no __________ to young William Cody.

"__________ me a chance at __________!" said Billy. "I ride __________ well as any man."

"__________ takes more than riding," __________ Chrisman. "It takes sand."

__________ St. Louis newspaper lay __________ the table. A notice __________ it had set the __________ buzzing. Chrisman handed it __________ William Cody. This is __________ the boy read:

"To __________ Francisco in 8 days __________ Central Overland, California, and __________ Peak Express Company. The __________ courier of the Pony __________ will leave the Missouri __________, Tuesday, April 3rd, at __________ o'clock in the afternoon. __________ run weekly. It __________ carry letters only. It __________ start from a town __________ the Missouri River. That __________ will be in touch __________ the East by telegraph. __________ town will be named __________."

"Give me a chance," __________ Billy. "Where is it __________ start?"

"From St. Joseph, __________," replied the agent. "Do __________ want to watch them __________?"

"Sure," replied Billy. "But __________ want to carry the __________ muself!"

"We'll think about __________." said Chrisman.

Before 1860, __________ United States reached only __________ far west as the __________ River. There were hundreds __________ miles of forests and __________.

ADVENTURES OF THE WHALEPS

"Thar she blows!" That __________ the cry heard on __________ ships. They are exciting __________. They were the words __________ told that a quarry __________ been seen. That cry __________ the signal for the __________ of the whale, the __________ creature of the seas.

__________ days of the clipper __________ and pirates and of __________ American whalers are gone. __________ story of whaling is __________ of the roaring seafaring __________. It is an exciting __________, even today.

A whaling __________ carried several boats. These __________ were lowered from the __________ ship after whales were __________.

The whaleboats were very __________. Everything was where the __________could find it at __________ time of the chase. __________ harpoons were where the __________ could reach them quickly. __________ were in racks at __________ bow. Three hundred fathoms __________ rope were coiled in __________ tubs. There was a __________. The boat might not __________ near the mother ship.

__________ were four oarsmen and __________ mate in each boat. __________ man knew what his __________ was to be during __________ chase.

The mate was __________ of the crew. He __________ orders to the oarsmen. __________ was at the tiller. __________ steered the boat.

Each __________ had his job, too. __________ bow oarsmen was the __________. He stood up with __________ harpoon in his hands, __________ soon as the boat __________ near the whale. The __________ oarsman pulled the sweeping __________.

The tub oarsman threw __________ on the rope as __________ ran through the chocks. __________ water kept the rope __________ burning. The stroke oarsman __________ the stroke for the __________ men. He also helped __________ keep the line clear, __________ pull in the rope, __________ to coil it.

The __________ important weapon was the __________.

ADVENTURES OF THE WHALERS

"Thar she blows!" That __________ the traditional cry on __________ ships. No more exciting __________ than these have echoed __________ the seas. They were __________ words that broke monotony __________ whalers; they told that __________ quarry had been sighted. __________ cry was the signal __________ the chase of the __________, the mightiest creatures of __________ seas. Like the age __________ the clipper ships, or __________ days of pirates, the __________ when the American whalers __________ to the far corners __________ globe is gone. __________ story of whaling is __________ of the roaring seafaring __________, but it is an __________ story even today.

When __________ whaling vessel started out, __________ carried several boats which __________ lowered from the mother __________ after whales were sighted. __________ whaleboats were the picture __________ neatness. The whalers knew __________ everything must be where __________ could find it in __________ exciting moment of the __________. The boats were fully __________. The harpoons, ready to __________ seized by the mate, __________ in gleaming racks at __________ bow. Three hundred fathoms __________ rope were neatly coiled __________ wooden tubs. Other equipment __________ a compass, lanterns, candles, __________ food, for there was __________ certainty that the boat __________ stay within sight of __________ mother ship.

The crew __________ each boat consisted of __________ mate and four oarsmen. __________ man aboard knew exactly __________ his chore was to __________ during the chase.

The __________ was boss of the __________ and gave orders to __________ oarsmen. At the beginning __________ the chase he stood __________ the tiller, which was __________ the stern of the __________. With both his hands __________ the tiller, the mate __________ the craft.

Each of __________ four oarsmen had special __________, too. The bow oarsmen __________ as harpooner. When the __________ was approached, he stood __________

INDEPENDENCE DAY

Residents of a Midwestern __________ where a great celebration __________ to take place were __________ early on the morning __________ July Fourth. Everyone was __________ a hurry to finish __________ minute preparations. Boys and __________ called to their comrades, "__________ going to be a __________ day. We'll have a __________ crowd."

From the appearance __________ this town anyone might __________ that it was about __________ for an Independence Day __________. Flags were flying from __________ and public buildings. Gayly __________ automobiles, trucks, and wagons __________ nearly ready for the __________ parade which would be __________ important event of the __________. Much work had been __________ on these "floats." On __________ historical scenes were represented __________ as Betsy Ross making __________ first American flag and __________ Jefferson writing the stirring __________ of the Declaration of __________. Other floats showed the __________ between articles used in __________ days and those used __________. Candle molds, spinning wheels, __________ other cherished antiques of __________ times were shown on __________ floats.

Preparations had been __________ for several kinds of __________. Races would be held __________ those who wished to __________ them. In the afternoon __________ would be a baseball __________.

Picnic tables were ready __________ the big public park. __________ and other visitors to __________ little town had brought __________ lunches to share with __________ they hoped to see __________ the celebration.

A platform __________ had been built for __________ occasion was draped with __________, white, and blue cloth. __________ this platform a speaker __________ remind the people of __________ reason for having a __________.

The speaker for this __________ celebration was to be __________ Hood. He probably had __________ more about the Declaration __________ Independence and more about __________ days than anyone else __________ the community. He could __________ depended on for a __________

INDEPENDENCE DAY

People of a Midwestern __________ were to have a __________. They were up early __________ the morning of July __________. Everyone was in a __________ to finish last minute __________. Boys and girls called __________ to their friends, "It's __________ to be a clear __________. We'll have a good __________."

This was Independence Day. __________ flew from homes and __________ buildings. Cars, trucks, and __________ were nearly ready for __________ big parade.

The "floats" __________ ready. Scenes from history __________ represented. There was Betsy __________ making the first American __________. There was Thomas Jefferson __________ the Declaration of Independence. __________ floats showed things used __________ Colonial days and those __________ now. There were spinning __________ and many other things. __________ were floats which showed __________ of today.

There would __________ races, too. In the __________ there would be a __________ game.

Picnic tables were __________ in the public park. __________ and other visitors had __________ picnic lunches to share __________ friends.

A platform had __________ built. It was decorated __________ red, white, and blue __________. A speaker would remind __________ people why they were __________ a celebration.

The speaker __________ this year's celebration was __________ be Judge Hood. He __________ a great deal about __________ Declaration of Independence. He __________ more about Colonial days __________ anyone else in the __________. He would make a __________ speech.

Tom Fleming was __________ represent Thomas Jefferson in __________ parade. His mother had __________ his costume.

One day __________ the celebration Tom and __________ friends went to visit __________ Hood. They learned a __________ deal about the Declaration __________ Independence. They learned about __________ men who had written __________ signed it. They also __________ why it was written.

__________ costume was heavy. He __________ of how warm Jefferson __________ have felt. The long __________

Achievement Test for Redundancy Study IV

THE SHINING METAL

Directions

This is a test of your ability to answer questions about the story you have just read.

1. Your answer must be marked, in pencil, on the separate answer sheet which has been provided.

   The following is a sample questions to show how your answers are to be marked. Study the sample carefully and if you have any questions, raise your hand.

****

SAMPLE QUESTION

1. In what year did Columbus discover America?

   (1) 1092 (2) 1492 (3) 1892 (4) 1490

ANSWER TO BE MARKED ON SEPARATE ANSWER SHEET

1. (1) (2) (3) (4)

The correct answer to the sample question is answer Number 2. On the separate answer sheet we have blackened the space beside the Number 2 to show the correct answer.

****

2. Read each question carefully and then look at the four choices shown underneath the question. Decide which of the four choices is the correct answer. Then turn to the separate answer sheet and blacken the space beside the number that matches the answer you have selected. Blacken the space between the lines completely but make sure you blacken only one space for each question.

3. You should try to answer as many questions as you can. Do not spend a great amount of time on any one question; if you cannot think of the answer quickly, move on to the next question.

4. If you wish to change any answer, erase your first answer completely. Do not make any stray marks on the answer sheet.

PLEASE DO NOT MAKE ANY MARKS ON THE TEST BOOKLET
MARK YOUR ANSWERS WITH PENCIL ONLY

"The Shining Metal"

1. The "shining metal" is

   (1) bauxite
   (2) cryolite
   (3) aluminum
   (4) silver

2. The man who invented an inexpensive way to make the shining metal was

   (1) Charles Ball
   (2) Charles Hall
   (3) Charles Hill
   (4) Charles Hull

3. Charles worked in a laboratory

   (1) at school
   (2) at his father's office building
   (3) in his father's woodshed
   (4) at his friend's house

4. Charles got most of his equipment

   (1) by making it himself
   (2) as a gift from his father
   (3) by buying it with his own money
   (4) by borrowing it from a friend

5. The first thing that Charles did was to

   (1) buy some new batteries
   (2) remake some old batteries
   (3) repair an electric stove
   (4) build a new type of battery

6. Charles had read books about

   (1) chemistry
   (2) mining
   (3) refining
   (4) manufacturing

7. Charles worked on a new way to

   (1) make aluminum from alumina
   (2) mine bauxite
   (3) get alumina out of bauxite
   (4) refine cryolite

8. Why was aluminum so expensive before Charles's new way of refining it?

(1) It was very rare.
(2) Mining it was very difficult.
(3) Refining it took much time and work.
(4) People thought it was the same as silver.

9. Before Charles developed his new method, how much aluminum had been made?

(1) none
(2) about 100 pounds
(3) less than 25 tons
(4) over 1000 tons

10. Alumina is found in an ore called

(1) aluminum
(2) bauxite
(3) cryolite
(4) silicate

11. What material did Charles use to help dissolve the alumina?

(1) cryolite
(2) chlorate
(3) bauxite
(4) potassium

12. In the production of aluminum, which of these processes comes next after mining?

(1) refining
(2) crushing
(3) mixing with water
(4) molding

13. Compared with most other metals, aluminum weighs

(1) 1/10 as much
(2) 1/3 as much
(3) 2 times as much
(4) 10 times as much

14. Which of these is an ore?

(1) aluminum
(2) silver
(3) barium
(4) bauxite

15. Which of these is a metal?

(1) cryolite
(2) bauxite
(3) aluminum
(4) ore

16. What is used to loosen the ore in the mines?

(1) picks
(2) dynamite
(3) heat
(4) drills

17. How is ore carried from the mines to the crushing mills?

(1) by carts
(2) by trucks
(3) by railway
(4) by barges

18. Solid pieces of aluminum are called

(1) "bricks"
(2) "blocks"
(3) "pigs"
(4) "bars"

19. About how long ago did Charles discover his process?

(1) 10 years
(2) 25 years
(3) 75 years
(4) 200 years

20. When cryolite is heated, it becomes

(1) a powder
(2) a gas
(3) a solid
(4) a liquid

21. Which of the following statements is not true of aluminum?

(1) It will rust.
(2) It can be shaped into many forms.
(3) It is used to make more than 3000 different things.
(4) It can be polished like silver.

22. Which of the following was not a result of Charles's work?

(1) Many new industries were developed.
(2) Thousands of new jobs were created.
(3) Aluminum was made more durable.
(4) Aluminum was processed more inexpensively.

23. Where would an aluminum miner work most of the time?

(1) in the open air
(2) in a mine tunnel
(3) in a laboratory
(4) in a factory

24. What is the main reason that railway tracks are laid to the place where the bauxite is to be mined?

(1) to carry the miners to work
(2) to carry in mining equipment
(3) to carry ore to the crushing mills
(4) to carry away the top crust of earth from the mine area

25. Which of the following is true about the supply of bauxite?

(1) There was once a large supply but it is now almost used up.
(2) There has been a large supply until now, but it could become scarce in the future.
(3) There has never been a large supply.
(4) There is an almost endless supply.

26. What color is bauxite?

(1) It is always white.
(2) It is always red.
(3) It is always the same color as aluminum.
(4) It can be white, yellow, red or almost any color.

27. How is water used in making aluminum?

(1) to loosen the ore at the mine
(2) to dissolve the cryolite
(3) to dissolve the minerals in the powdered ore
(4) to wash the finished product

28. Why is aluminum a valuable metal today?

(1) It is very expensive
(2) It is often mistaken for silver.
(3) It is not very expensive and has many uses.
(4) It is as hard as diamond.

29. Why is aluminum produced in different forms?

(1) Different forms are needed for different purposes.
(2) Different refineries learned to make it in different ways.
(3) The different methods of refining it cause the different forms.
(4) The different forms depend on the color of the ore.

30. What source of electricity did Charles use in his laboratory?

(1) a wire from his father's house
(2) a portable electric generator
(3) batteries
(4) lightening

APPENDIX B

Table of Contents

LEARNING MATERIALS AND TESTS FOR STUDIES OF ELEMENTARY SET CONCEPTS....B-2

Posttest....B-17

Sets (VI)

You have known about sets of objects for a long time. You probably have a set of dishes in your home. Maybe your father has a set of garden tools or a set of golf clubs.

The word set is used in the study of mathematics. You can think of a set as a number of objects that are grouped together for some reason. The objects are called elements of the set. The dishes are the elements of a set of dishes. Each golf club is an element of the set of golf clubs.

The reason why objects are elements of a certain set may not be clear. We could have a set with three elements -- a horse, a book, and a dish -- if we chose to list these as the elements of the set.

If there are so many elements in a set that they all cannot be listed, we may just describe the set. Examples of this are:

the set with the elements all eleventh graders
the set which includes all horses
the set with all even numbers as its elements

Disjoint Sets

We are now going to learn about some things about pairs of sets. This first section is about pairs of sets that are called disjoint sets. You will be given examples of disjoint sets. See if you can tell what makes two sets disjoint sets.

The set with the elements 1,2,3 and the set with the elements 4,5,6 are examples of disjoint sets. However, the set with elements 1,2,3 and the set with the elements 3,4,5 are not disjoint sets.

The set with all men as its elements and the set with all women as its elements are disjoint sets. But, the set with all men as its elements and the set with all people as its elements are not disjoint sets.

The set with the elements a,b,c and the set with the elements x,y,z are disjoint sets. But, the set with the elements a,b and the set with the elements a,e,i,o,u are not disjoint sets.

Here are some more pairs of sets that are disjoint sets.

1. The set which has all dogs in it and the set which has all cats in it.

2. The set with 1,3,5,9 as its elements and the set with 4,2,8 as its elements.

3. The set with elements t,g,r and the set with the elements s,f.

4. The set which has all even numbers in it and the set which has all odd numbers in it.

Here are some more pairs of sets that are not disjoint sets.

1. The set which has all cars in it and the set which has all black Fords in it.

2. The set with 1,5,6 as its elements and the set with 5,8,2 as its elements.

3. The set with the elements s,t,u and the set with the elements s,a,t.

4. The set which has all odd numbers in it and the set which has all numbers greater than ten in it.

Can you make up other examples of disjoint sets?

Union of Two Sets

This section is about the union of two sets. The union of the set with top, ball, cat as its elements and the set with dog, car as its elements is the set with top, ball, cat, dog, car as its elements.

Some more examples of the union of two sets will be given. See if you can tell how to make the union of two sets.

1. The union of the set with the element Tom and the set with the element Joe is the set with the elements Tom, Joe.

2. The union of the set with the element Tom and the same set (that is, the set with the element Tom), is the set with the element Tom.

3. The union of the set with the elements Tom, Joe and the set with the element Bill is the set with the elements Tom, Joe, Bill.

4. The union of the set with the elements Tom, Joe and the set with the element Joe is the set with the elements Tom, Joe.

5. The union of the set with 0,1,2 as its elements and the set with 7,8,9 as its elements is the set with 0,1,2,7,8,9 as its elements.

6. The union of the set with elements a,b,c and the set with the elements b,c,d is the set with elements a,b,c,d.

7. The union of the set which has all men over six feet tall in it and the set which has all women over six feet tall in it is the set which has adults over six feet tall in it.

8. The union of the set which has all numbers greater than ten in it and the set which has all numbers greater than twenty in it is the set which has all numbers greater than ten in it.

Can you tell how to make the union of two sets?

Intersection of Two Sets

This section is about the intersection of two sets. The intersection of the set with a,b,c as its elements and the set with c,d,e as its elements is the set with c as its elements.

Some more examples of the intersection of two sets will be given. See if you can tell how to make the intersection of two sets.

1. The intersection of the set with Tom as its element and the same set (that is, the set with Tom as its element) is the set with Tom as its element.

2. The intersection of the set with Tom, Joe as its elements and the set with Joe as its element is the set with Joe as its element.

3. The intersection of the set with Tom as its element and the set with Joe as its element is the set without any elements.

4. The intersection of the set with 8,6,4,2 as its elements and the set with 1,2,3,4,5 as its elements is the set with 2,4 as its elements.

5. The intersection of the set which has all animals in it and the set with barn, cow, house, dog as its elements is the set with cow, dog as its elements.

6. The intersection of the set with a,e,i,o,u as its elements and the set with d,a,e,r,b as its elements is the set with a,e as its elements.

7. The intersection of the set with the elements 7,8,9,10 and the set with the elements 4,9,6,7 is the set with the elements 9,7.

8. The intersection of the set which has all whole numbers less than ten in it and the set which has all whole numbers greater than four in it is the set with 5,6,7,8,9 as its elements.

9. The intersection of the set with Joe, Mary, Dick, Bob as its elements and the set with Bill, Jan, Mary as its elements is the set with Mary as its element.

Can you tell how to make the intersection of two sets?

Sets (VD)

You have known about sets of objects for a long time. You probably have a set of dishes in your home. Maybe your father has a set of garden tools or a set of golf clubs.

The word set is used in the study of mathematics. You can think of a set as a number of objects that are grouped together for some reason. The objects are called the elements of the set. The dishes are the elements of a set of dishes. Each golf club is an element of the set of golf clubs.

The reason why objects are elements of a certain set may not be clear. We could have a set with three elements -- a horse, a book, and a dish -- if we chose to list these as the elements of the set.

If there are so many elements in a set that they all cannot be listed, we may just describe the set. Examples of this are:

the set with the elements all eleventh graders
the set which includes all horses
the set with all even numbers as its elements

Disjoint Sets

In this section we will learn about disjoint sets. Two sets are said to be disjoint if no element belongs to both sets.

The set which is made up of all boys and the set which is made up of all girls are disjoint sets because no one is a boy and a girl at the same time. Everyone is either a member of the set of all boys or a member of the set of all girls.

The set of all eleventh graders and the set of all football players are not disjoint because some eleventh graders are also football players.

Another example of disjoint sets is the set with a,b,c,d as its elements and the set with e,f,g as its elements. These sets are disjoint because none of the elements of either set are also elements of the other set.

An example of sets that are not disjoint is the set with elements a,e,i,o,u and the set with elements a,b,c,d. These two sets are not disjoint because the letter a is an element in both sets.

Union of Two Sets

This section is about the union of two sets. The union of two sets is a set that contains all of the elements in either the first set or in the second set.

For example, the union of the set which has all eleventh grade boys in it and the set which has all eleventh grade girls in it is the set which has all eleventh graders in it.

The union of the set with A,B,C,D as its elements and the set with D,E,F as its elements is the set with A,B,C,D,E,F as its elements. You will see that each element of the set with A,B,C,D as its elements is in the union and that each element of the set with D,E,F as its elements is in the union. You will also see that the letter D is put in only once in the union although it appears in both sets.

An element is in the union of two sets because it is an element of one set or the other. For example, the letter d is in the union of the set with b,d as its elements and the set with b,f,g as its elements because the letter d is an element of the set with b,d as its elements. The letter b is also in the union because it is an element of the set whichhas b,d in it and the set which has b,f,g in it as well. The whole union of the set with elements b,d and the set with elements b,f,g is the set with elements b,d,f,g. Each of the letters in the set with b,d,f,g as its elements are in either the set with b,d as its elements or the set with b,g,f as its elements.

Intersection of Two Sets

This section is about the intersection of two sets. The intersection of two sets is a set that has all the elements that are in teh first set and that are in the second set.

For example, the intersection of the set of eleventh graders and the set of football players is the set of eleventh graders who are football players.

The intersection of the set with elements A,B,C,D and the set with the elements A,C,E,F is the set with elements A,C. The letters A and C are the only letters that are in both the set with A,B,C,D as elements and the set with A,C,E,F as elements. An element is not in the intersection unless it is in both of the sets.

Here is another example. The intersection of the set with house, barn, shed as its elements and the set with house, barn, school as its elements is the set with house, barn as its elements. The intersection is the set with house, barn as its elements because "house" and "barn" are elements of both the set with house, barn, shed as its elements and the set with house, barn, school as its elements.

Sets (FI)

There are many ways to talk about "any group of things." We might say: a set of dishes,
or a set of garden tools,
or a ______ of golf clubs.

Can you see one way we may talk about a group of things? Any group of things may be called a ______.

We can show a set in several ways. Think about what is said below:

A set of dishes may be shown by dishes

A set of garden tools may be shown by garden tools

Golf clubs means a ______ of golf clubs.

A ○ may be used to show a ______. Now you can see that one way to show a set is by a ______.

Sometimes we want to refer to things in a set. The elements of a set of golf clubs are each of the golf clubs. The elements of a garden tools are each of the garden tools. You can see that a china dish, a brown dish and a plastic dish are __________ of dishes. One way to show the elements of dishes is like this

china dish
brown dish
plastic dish

The first five letters might be shown by A B C D E where the elements are A,B,C,D and E.

Disjoint Sets

Let's think about two sets that are called disjoint sets. See if you can tell from the examples what makes two sets disjoint sets.

1 2 3 and 4 5 6 are disjoint, 1 2 3 and 3 4 5 are not disjoint.

all men and all women are disjoint, all men and all people are not disjoint.

a b c and x y z are disjoint, a b and e a o i u are not disjoint.

Below you will find pairs of sets that are disjoint sets.

all dogs and all cats , 1 3 5 9 and 4 8 2 , r g t and s f , even numbers and odd numbers .

Here are some pairs of sets that are not disjoint sets.

all cars and black Fords , 1 5 6 and 2 8 5 ,

s t u and s t a , all odd numbers and all numbers greater than 10 .

Can you make up other examples of disjoint sets?

Union of Two Sets

Now we will look at the union of two sets. The symbol, $\cup$, is used to mean union. The union of

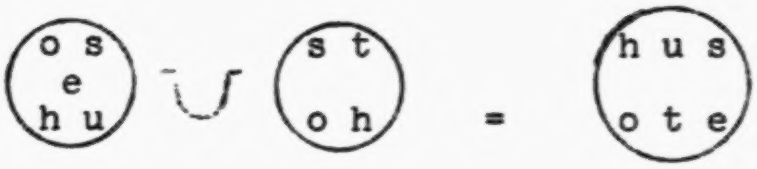
top ball cat and dog car is top car ball cat dog

Here are some more examples of the union of two sets.

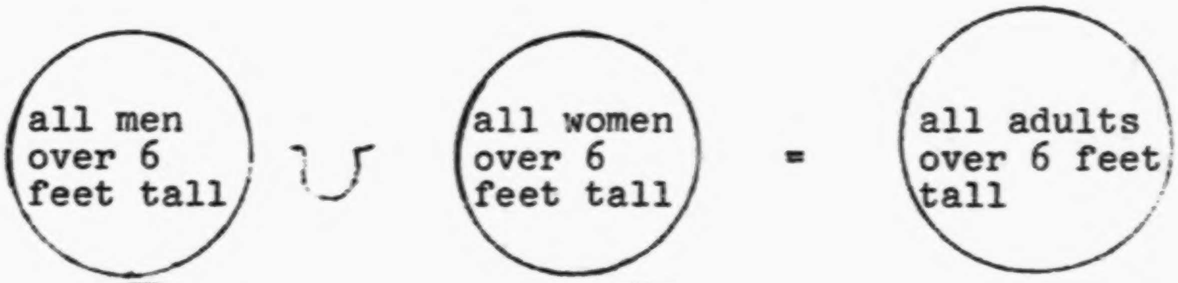
Tom Jack Bob $\cup$ Joe Pete = Tom Joe Bob Pete Jack

0 1 2 $\cup$ 7 8 9 = 0 7 1 2 8 9

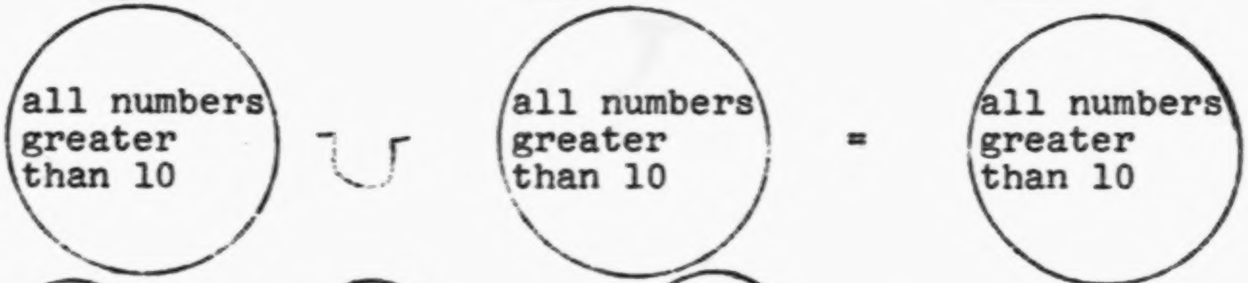
a b c $\cup$ b c d = a b c d



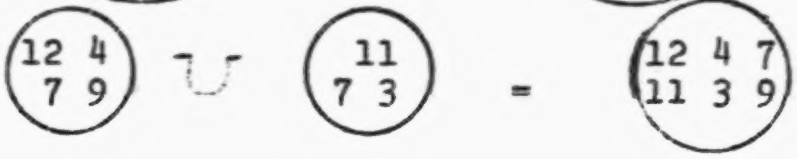
o s
e
h u
∪
s t
o h
=
h u s
o t e



all men over 6 feet tall
∪
all women over 6 feet tall
=
all adults over 6 feet tall



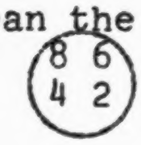
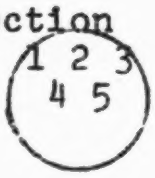
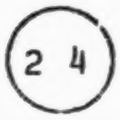
all numbers greater than 10
∪
all numbers greater than 10
=
all numbers greater than 10



12 4
7 9
∪
11
7 3
=
12 4 7
11 3 9

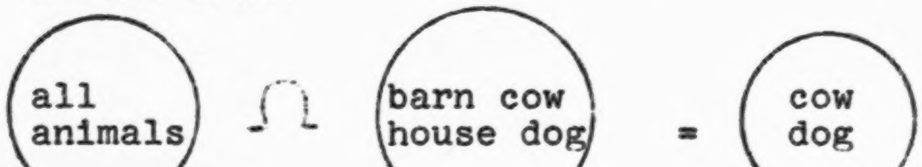
Can you tell how to make the union of two sets?

Intersection of Two Sets

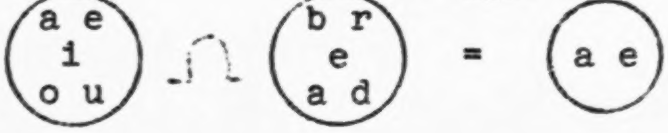
The symbol, ∩ , is used to mean the intersection of two sets. The intersection of  and  is  .

8 6
4 2
1 2 3
4 5
2 4

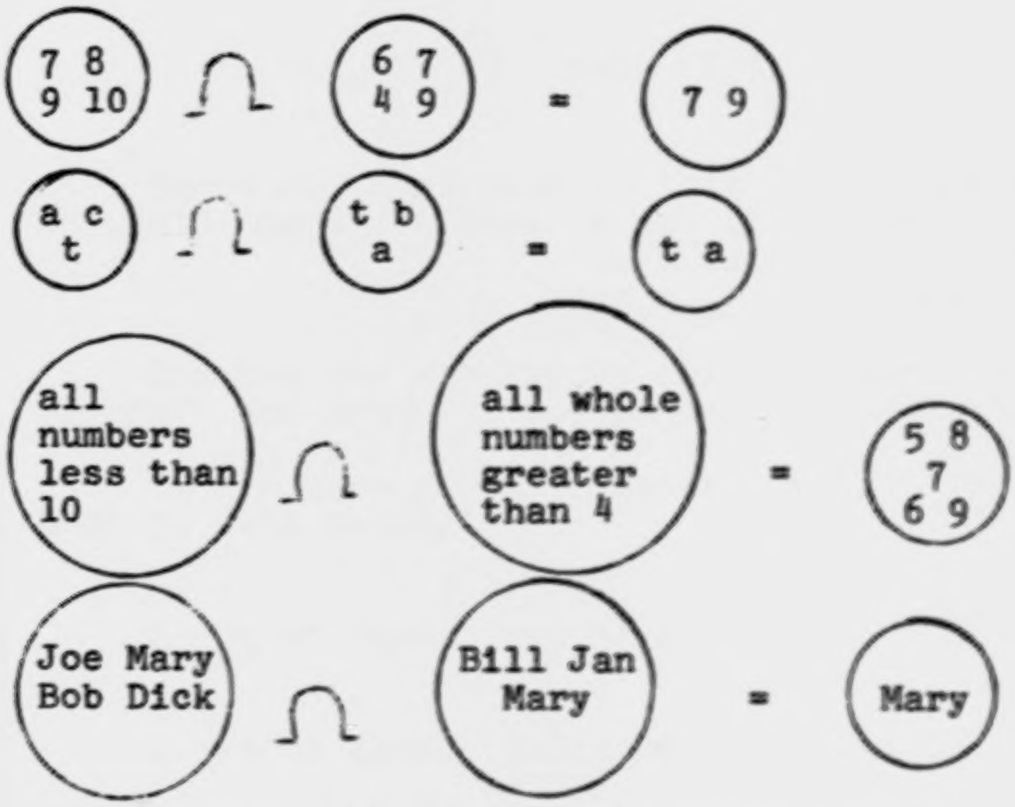
Here are some more examples of the intersection of two sets.



all animals
∩
barn cow
house dog
=
cow
dog



a e
i
o u
∩
b r
e
a d
=
a e


7 8 9 10
∩
6 7 4 9
=
7 9
a c t
∩
t b a
=
t a
all numbers less than 10
∩
all whole numbers greater than 4
=
5 8 7 6 9
Joe Mary Bob Dick
∩
Bill Jan Mary
=
Mary

Can you tell how to make the intersection of two sets?

Sets (FD)

There are many ways to talk about "any group of things." We might say: a set of dishes,
or a set of garden tools,
or a ______ of golf clubs.

Can you see one way we may talk about a group of things? Any group of things may be called a ______.

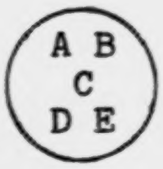
We can show a set in several ways. Think about what is said below:

A set of dishes may be shown by dishes

A set of garden tools may be shown by garden tools

Golf clubs means a ______ of golf clubs.

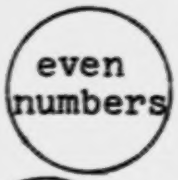
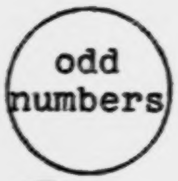
A ◯ may be used to show a ______. Now you can see that one way to show a set is by a ______.

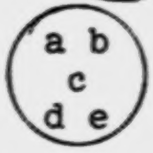
Sometimes we want to refer to things in a set. The elements of a set of golf clubs are each of the golf clubs. The elements of a garden tools are each of the garden tools. You can see that a china dish, a brown dish and a plastic dish are ________ of dishes. One way to show the elements of dishes is like this china dish brown dish plastic dish. The first five letters might be shown by  where the elements are

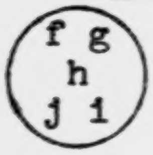
A,B,C,D and E.

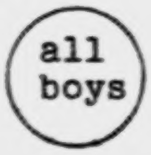
Disjoint Sets

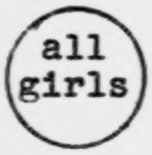
Two sets are said to be disjoint sets if no element belongs to both sets.

Examples: 
even numbers
and 
odd numbers

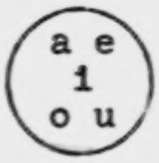


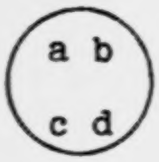
and 

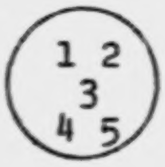


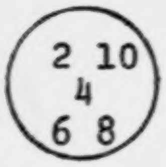
and 

The sets below are not disjoint.



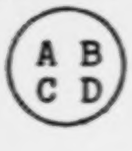
and 

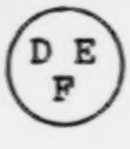


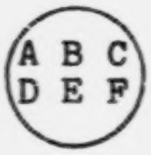
and 

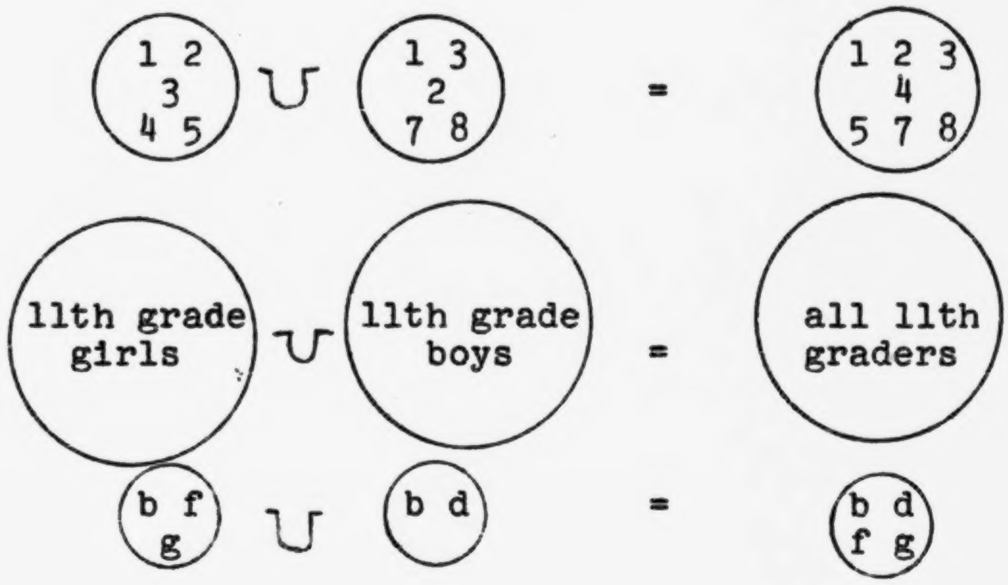
Union of Two Sets

The union ($\cup$) of two sets is a set that has in it all of the different elements in both sets.

Examples: 

$\cup$ 

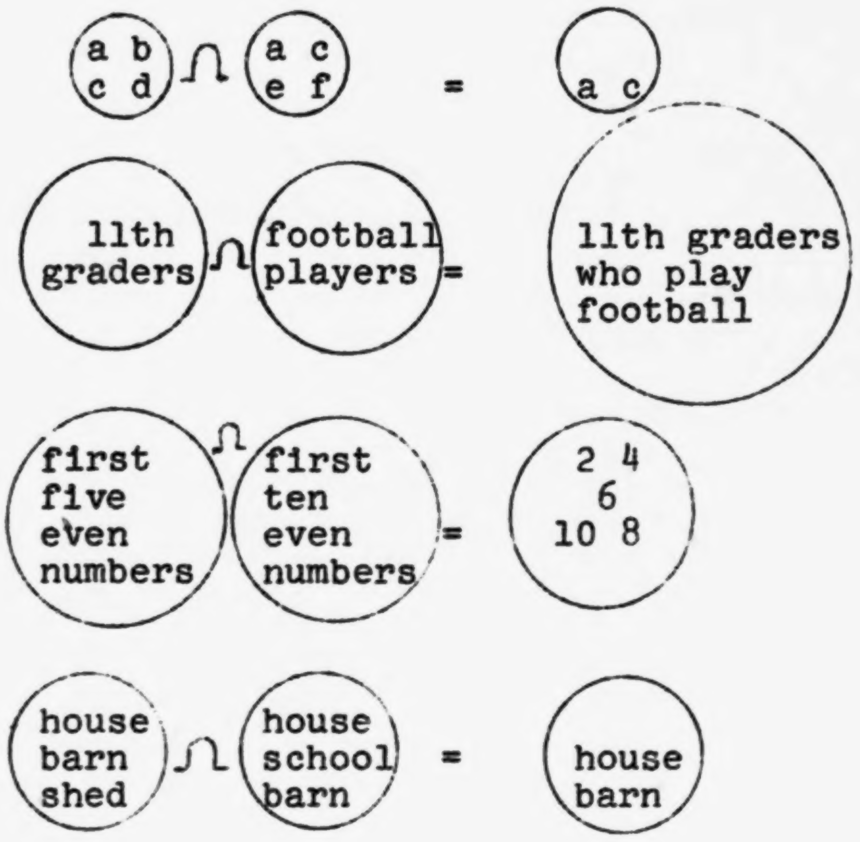
= 


1 2 3 4 5 ∪ 1 3 2 7 8 = 1 2 3 4 5 7 8
11th grade girls ∪ 11th grade boys = all 11th graders
b f g ∪ b d = b d f g

Intersection of Two Sets

The intersection (∩) of two sets is a set that has in it all of the elements that are the same in both sets.

Examples:


a b c d ∩ a c e f = a c
11th graders ∩ football players = 11th graders who play football
first five even numbers ∩ first ten even numbers = 2 4 6 10 8
house barn shed ∩ house school barn = house barn

Posttest

Name ____________________

On this test, $\cup$ means union.
On this test, $\cap$ means intersection.

Answer questions 1-12 either YES or NO.

1. Is 8 an element of the set of all whole numbers between 1 and 10? ____________

2. Are (table chair barn) and (house knife string) disjoint sets? ____________

3. Could horse be an element of (all animals) ? ____________

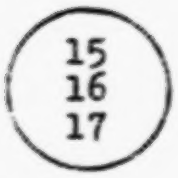
4. Think about the set with the elements small, long, short and the set with the elements tall, high, big. Are these sets disjoint sets? ____________

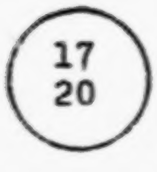
5. Could table be an element of the set of all members of a family? ____________

6. Is the intersection of the set with the elements 1,2,3,4 and the set with the elements 2,3,4,5,6 a new set with the elements 2,3,4? ____________

7. Is 22 an element of (even numbers between 1 and 20) ? ____________

8. Are (pen pencil paper) and (paper pen pencil) disjoint sets? ____________

9. Think about 

and 

.

Is 16 an element of the [illegible] of these sets? __________

10. Are the set with the elements a,b,c,d,e and the set with the elements a,e,i,o,u disjoint sets? __________

11. Think about the sets with the elements 8, 9, 10 and the set with the elements 13, 9. Is 13 an element of the union of two sets? __________

12. Are {2,4,6,8,10} and {1,2,3,4,5 disjoint sets? __________

---

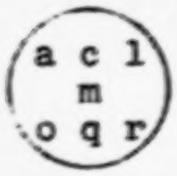
13. What is one element of {letters in the alphabet} ? __________

14. Write down an example of something that is not an element of the set with 2,4,6,8 as its elements. __________

15. Make two disjoint sets.

and

16. Think about the set with the elements wood, lead iron, steel and the set with the elements iron, wood, steel, lead. Write the intersection of these two sets. __________

17. If 

is the [illegible] of 2 sets, what could

the 2 original sets be? __________ and __________

18. Write down one element of the set of the days of the week. __________

19. List two sets that are disjoint.

{__________} and {__________}

20. Think about the set with the elements a,o,u and the set with the elements l,m,n,o. What is the union of these two sets? __________

21. Write down something that does not belong to

k j i l m . __________

22. a e i o u $\cap$ a o l m p =

23. If you know that the intersection of two sets is the set with big, fat as its elements what could the two original sets be? __________

____

24. Give one element of months of the year . __________

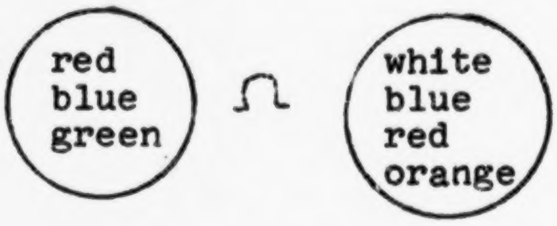
25. 1 3 5 7 $\cup$ 5 6 7 8 =

26. If you know that the union of two sets is the set with house, barn, cat, dog, boy as its elements, what might be the two original sets?

__________ and __________

27. $\{A,B,C,D,E\} \cap \{B,C,D,L,N\} =$

28.


red
blue
green
∩
white
blue
red
orange

$=$

APPENDIX C

Table of Contents

MATERIALS AND TESTS FOR VOCABULARY LEARNING STUDIES III AND IV....C-2

- Synonym Production Test Used in Vocabulary Study III....C-2
- Synonym Matching Test Used in Vocabulary Study III....C-6
- Definition Material Used in Vocabulary Study III....C-9
- Synonym Material Used in Vocabulary Study III....C-12
- Sentence Material Used in Vocabulary Study III...C-20
- Sample Synonym Production Test Used in Vocabulary Study IV....C-28
- Synonym Materials Used in Vocabulary Study IV....C-30
- Definition Material Used in Vocabulary Study IV..C-68

Synonym Production Test Used in Vocabulary Study III

Production Test

Name ________________________________

Write as many words as you can that have meanings which are the same as or similar to the four words below.

Alacrity	Lissome	Succinct	Paroxysm
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________

Name ____

Write as many words as you can that have meanings which are the same as or similar to the four words below.

Antipodal	Duress	Altercation	Nascent
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________
________	________	________	________

Name ____

Write as many words as you can that have meanings which are the same as or similar to the four words below.

Limpid	Stripling	Salubrious	Ignominious
__________	__________	__________	__________
__________	__________	__________	__________
__________	__________	__________	__________
__________	__________	__________	__________
__________	__________	__________	__________
__________	__________	__________	__________
__________	__________	__________	__________
__________	__________	__________	__________
__________	__________	__________	__________
__________	__________	__________	__________
__________	__________	__________	__________
__________	__________	__________	__________

Synonym Matching Test Used in Vocabulary Study III

Matching Test

Name ________________________________

This is a test to see how well you have learned the correct meanings of the words you just studied. Lists 1 and 2 represent synonyms for the words in Groups 1 and 2. For each word in List 1, write the number in the blank that corresponds to the word that means the same or most nearly the same from Group 1. After you have finished List 1 then continue on to List 2 using the words in Group 2. Only Group 1 words are to be used with the synonyms in List 1 and Group 2 words used with List 2 synonyms.

Group 1

1. Succinct
2. Paroxysm
3. Lissome
4. Duress
5. Altercation
6. Stripling

List 1

___ willowy
___ cub
___ squabble
___ minor
___ brief
___ control
___ quarrel
___ argument
___ spasm
___ youth
___ convulsion
___ dispute
___ flexible
___ outburst
___ restraint
___ confinement
___ curt
___ captivity
___ limber
___ lad
___ seizure
___ condensed
___ supple
___ short

Group 2

1. Limpid
2. Nascent
3. Salubrious
4. Ignominious
5. Alacrity
6. Antipodal

List 2

___ treacherous
___ immature
___ promptness
___ emerging
___ converse
___ serene
___ eagerness
___ punctuality
___ wholesome
___ beginning
___ invigorating
___ quickness
___ dishonorable
___ bracing
___ transparent
___ clear
___ contrasting
___ crystalline
___ fraudulent
___ new
___ healthful
___ opposite
___ vile
___ reverse

Definition Material Used in Vocabulary Study III

Time:________________

Definitions

Directions: Read the definition of each word carefully and then write in the space provided below it a definition in your own words.

A person undergoing a visible and violent reaction from either physical or emotional causes can be said to be having a paroxysm. Thus a paroxysm is any unusually explosive excitation.

When all the elements of the environment work together to produce a feeling of general well being, it can be considered a salubrious environment. Thus salubrious describes any condition that is good for one.

When two or more people express different opinions, get excited, and contradict each other, the event is called an altercation. Thus an altercation is a social interaction characterized by heated exchange of opposing arguments.

A person who performs a task as soon as he perceives it and as though he really wants to do it is acting with alacrity. Thus alacrity implies both immediacy and cheerfulness in the carrying out of some activity.

Synonym Material Used in Vocabulary Study III

Synonyms

Directions: On each of the following pages are two lists of words. The first list is made up of the words whose meanings you are to learn. In the second list, there is a synonym for each word in the first plus one word which is not a synonym for any of the words in the first list. Write the word from List 1 in the space beside its synonym in List 2. Write "none" by the word which is not a synonym. When you have finished all five blanks, fold the page back along the dotted line and check your answers as they are given on the other side of the page. Then follow the same procedure for the other pages in this booklet.

List 1: Antipodal Ignominious Stripling Succinct

List 2:

1. __________lad

2. __________dishonorable

3. __________short

4. __________heal

5. __________opposite

xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx..
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx

1. stripling
2. ignominious
3. succinct
4. none
5. antipodal

List 1: antipodal ignominious stripling succinct

List 2:

1. __________brief

2. __________reverse

3. __________fraudulent

4. __________invite

5. __________cub

xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx

1. succinct
2. antipodal
3. ignominious
4. none
5. stripling

List 1: antipodal ignominious stripling succinct

List 2:

1. __________treacherous

2. __________converse

3. __________curt

4. __________lad

5. __________incur

xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx

1. ignominious
2. antipodal
3. succinct
4. stripling
5. none

List 1: antipodal ignominious stripling succinct

List 2:

1. __________material

2. __________counter

3. __________minor

4. __________vile

5. __________compressed

xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx

1. none
2. antipodal
3. stripling
4. ignominious
5. succinct

List 1: antipodal ignominious stripling succinct

List 2:

1. __________current xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
2. __________compact xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
3. __________sprig xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
4. __________contemptible xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
5. __________antagonistic xxxxxxxxxxxxxxxxxxxxx

1. none
2. succinct
3. stripling
4. ignominious
5. antipodal

List 1: antipodal ignominious stripling succinct

List 2:

1. __________contrasting

2. __________foul

3. __________hurried

4. __________youth

5. __________condensed

xxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxx

1. antipodal
2. ignominious
3. none
4. stripling
5. succinct

Sentence Material Used in Vocabulary Study III

Time: ____________________

Sentences

Directions; On the next page are given four words whose meanings you are to learn followed by five short sentences. In the blank to the left of each sentence write the word non by the sentence not related to any of the words. When you have classified each sentence fold the page along the dotted line and check your answers. For each word there is only one sentence and there is one sentence which does not have a related word. Then continue the same procedure for the remainder of the pages in the booklet.

List 1: duress limpid lissome nascent

List 2:

1. __________A tulip bulb shows just a tip of green above the earth.

2. __________A tall tale told by a fisherman.

3. __________A hula dancer performs with grace and skill.

4. __________Direct rays from the sun light up a tiny glade encircled by deep forest.

5. __________A wild bird trys to escape through the bars of his cage.

xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx

1. Nascent
2. none
3. lissome
4. limpid
5. duress

List 1: duress limpid lissome nascent

List 2:

1. __________ Sounds of a flute coming from a distance through still air.

2. __________ The first fading of darkness each morning.

3. __________ A dog's faith in his master.

4. __________ A dictator refuses to allow the newspapers "Freedom of expression."

5. __________ A weeping willow moving in a breeze.

xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx

1. limpid
2. nascent
3. none
4. duress
5. lissome

List 1: duress limpid lissome nascent

List 2:

1. __________ A dangerous criminal is handcuffed to two policemen.

2. __________ Three young greyhounds frolicking on a lawn.

3. __________ A rock crystal free of impurities.

4. __________ A magician casts his spell.

5. __________ A sketch containing the necessary notes for a large ambitious sculpture.

xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx

1. duress
2. lissome
3. limpid
4. none
5. nascent

List 1: duress limpid lissome nascent

List 2:

1. __________A man weakened by fatigue.

2. __________An engineer realizing which line of attack will eventually produce the solution to a construction problem.

3. __________A beautiful princess held captive by a wicked knight.

4. __________The fingers of a concert pianist as they run across a keyboard.

5. __________An argument presented briefly but well.

xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxx

1. none
2. nascent
3. duress
4. lissome
5. limpid

List 1:   duress   limpid   lissome   nascent

List 2:

1. __________An acrobat performs a difficult feat with ease.

2. __________An author's style characterized by being very understandable and smooth.

3. __________An amusing story told to an audience.

4. __________A newborn baby lying in a cradle.

5. __________A child is made to "clean up his plate" before he gets dessert.

xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx

1. lissome
2. limpid
3. none
4. nascent
5. duress

List 1: duress limpid lissome nascent

List 2:

1. ________A butterfly coming out of its cocoon.

2. ________An over active mental patient is put in a strait jacket.

3. ________The large, beautiful eyes of a doe.

4. ________An ice skater bends and sways gracefully while figure skating.

5. ________A word whose meaning is unknown.

xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx

1. nascent
2. duress
3. limpid
4. lissome
5. none

Sample Synonym Production Test Used in Vocabulary Study IV

SAMPLE SYNONYM PRODUCTION TEST

Name ____________________________

Write as many synonyms for the following words as possible.

tractive	gauche
lissome	surreptitious

Synonym Materials Used in Vocabulary Study IV

NAME ____________________

DIRECTIONS: On each of the following pages are two lists of words. The first list is made up of the words whose meanings you are to learn. In the second list, there is a synonym for each word in the first plus one word which is not a synonym for any of the words in the first list. Write the word from List 1 in the space beside its synonym in List 2. Write "none" by the word which is not a synonym. When you have finished all five blanks, fold the page back and check your answers as they are given on the other side of the page. Then follow the same procedure for the other pages in this booklet.*

START TIME _______________

---

*These same directions appeared on the front of every booklet.

Booklet 1

Booklet 2

List 1: tractive, gauche, lissome, surreptitious

List 2:

1. __________ drawing
2. __________ clumsy
3. __________ pliable
4. __________ secretive
5. __________ customer

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

List 1: juxtapose, acumen, inveigh, celerity

List 2:

1. __________ wisdom
2. __________ cypress
3. __________ join
4. __________ censure
5. __________ velocity

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

1. tractive
2. gauche
3. lissome
4. surreptitious
5. none

1. acumen
2. none
3. juxtapose
4. inveigh
5. celerity

List 1: tractive, gauche, lissome, surreptitious

List 2:

1. __________ awkward XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ intimate XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ pulling XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ flexible XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ shady XXXXXXXXXXXXXXXXX

List 1: juxtapose, acumen, inveigh, celerity

List 2:

1. __________ speed XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ inspire XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ prudence XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ blame XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ neighbor XXXXXXXXXXXXXXXXX

1. gauche
2. none
3. tractive
4. lissome
5. surreptitious

1. celerity
2. none
3. acumen
4. inveigh
5. juxtapose

List 1: tractive, gauche, lissome, surreptitious

List 2:

1. __________ ungraceful XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ plastic XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ sneaky XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ hauling XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ scholar XXXXXXXXXXXXXXXXX

List 1: juxtapose, acumen, inveigh, celerity

List 2:

1. __________ sanitary XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ adjoin XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ reproach XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ swiftness XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ keenness XXXXXXXXXXXXXXXXX

1. gauche
2. lissome
3. surreptitious
4. tractive
5. none

1. none
2. juxtapose
3. inveigh
4. celerity
5. acumen

List 1: tractive, gauche, lissome, surreptitious

List 2:

1. __________ wedlock
2. __________ underhandedness
3. __________ gawky
4. __________ elastic
5. __________ tugging

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

List 1: juxtapose, acumen, inveigh, celerity

List 2:

1. __________ border
2. __________ rapidity
3. __________ condemn
4. __________ waterfall
5. __________ brightness

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

1. none
2. surreptitious
3. gauche
4. lissome
5. tractive

1. juxtapose
2. celerity
3. inveigh
4. none
5. acumen

List 1: tractive, gauche, lissome, surreptitious

List 2:

1. __________ towing
2. __________ graceful
3. __________ granulate
4. __________ cumbersone
5. __________ shifty

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

List 1: juxtapose, acumen, inveigh, celerity

List 2:

1. __________ gaseous
2. __________ haste
3. __________ connect
4. __________ shrewdness
5. __________ denounce

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

1. tractive
2. lissome
3. none
4. gauche
5. surreptitious

1. none
2. celerity
3. juxtapose
4. acumen
5. inveigh

List 1: tractive, gauche, lissome, surreptitious

List 2:

1. __________ bendable
2. __________ stealthy
3. __________ unwieldy
4. __________ merrily
5. __________ dragging

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

List 1: juxtapose, acumen, inveigh, celerity

List 2:

1. __________ meet
2. __________ cleverness
3. __________ abuse
4. __________ melodious
5. __________ acceleration

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

1. lissome
2. surreptitious
3. gauche
4. none
5. tractive

1. juxtapose
2. acumen
3. inveigh
4. none
5. celerity

Booklet 3

Booklet 4

List 1: taxonomy, parturition, alacrity, chivalrous

List 2:

1. __________ eagerness XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ classification XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ unselfish XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ scratchy XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ childbirth XXXXXXXXXXXXXXXXX

List 1: rancid, antipodal, explication, limpid

List 2:

1. __________ odorous XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ elaboration XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ woody XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ transparent XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ opposite XXXXXXXXXXXXXXXXX

1. alacrity
2. taxonomy
3. chivalrous
4. none
5. parturition

1. rancid
2. explication
3. none
4. limpid
5. antipodal

List 1: taxonomy, parturition, alacrity, chivalrous

List 2:

1. __________ birth XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ tacky XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ generous XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ readiness XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ categorization XXXXXXXXXXXXXXXXX

List 1: rancid, antipodal, explication, limpid

List 2:

1. __________ translucent XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ stale XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ contrary XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ development XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ mischief XXXXXXXXXXXXXXXXX

1. parturition
2. none
3. chivalrous
4. alacrity
5. taxonomy

1. limpid
2. rancid
3. antipodal
4. explication
5. none

List 1: taxonomy, parturition, alacrity, chivalrous

List 2:

1. __________ soapy
2. __________ benevolent
3. __________ grouping
4. __________ nativity
5. __________ zest

[redacted]

List 1: rancid, antipodal, explication, limpid

List 2:

1. __________ lucid
2. __________ running
3. __________ expansion
4. __________ smelly
5. __________ contrasted

[redacted]

1. none
2. chivalrous
3. taxonomy
4. parturition
5. alacrity

1. limpid
2. none
3. explication
4. rancid
5. antipodal

List 1: taxonomy, parturition, alacrity, chivalrous

List 2:

1. __________ subdivision XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ considerate XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ hearty XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ hatching XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ cheerful readiness XXXXXXXXXXXXXXXXX

List 1: rancid, antipodal, explication, limpid

List 2:

1. __________ opposing XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ clear XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ old XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ warmth XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ amplification XXXXXXXXXXXXXXXXX

1. taxonomy
2. chivalrous
3. none
4. parturition
5. alacrity

1. antipodal
2. limpid
3. rancid
4. none
5. explication

List 1: taxonomy, parturition, alacrity, chivalrous

List 2:

1. __________ spirit
2. __________ organization
3. __________ delivery
4. __________ gallant
5. __________ lighted

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

List 1: rancid, antipodal, explication, limpid

List 2:

1. __________ enlargement
2. __________ crystal
3. __________ musty
4. __________ antithesis
5. __________ beneath

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

1. alacrity
2. taxonomy
3. parturition
4. chivalrous
5. none

1. explication
2. limpid
3. rancid
4. antipodal
5. none

List 1: taxonomy, parturition, alacrity, chivalrous

List 2:

1. __________ courteous
2. __________ do-able
3. __________ keenness
4. __________ genesis
5. __________ pigeonholing

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

List 1: rancid, antipodal, explication, limpid

List 2:

1. __________ repulsive
2. __________ contradictory
3. __________ wishful
4. __________ interpretation
5. __________ crystalline

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

1. chivalrous
2. none
3. alacrity
4. parturition
5. taxonomy

1. rancid
2. antipodal
3. none
4. explication
5. limpid

Booklet 5

Booklet 6

List 1: paroxysm, sinuous, reciprocation, aberration

List 2:

1. __________ sailing
2. __________ frenzy
3. __________ exchange
4. __________ unconformity
5. __________ circuitous

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

List 1: boorish, mediate, delineate, endemic

List 2:

1. __________ vulgar
2. __________ describe
3. __________ intercede
4. __________ nippy
5. __________ native

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

1. none
2. paroxysm
3. reciprocation
4. aberration
5. sinuous

1. boorish
2. delineate
3. mediate
4. none
5. endemic

List 1: paroxysm, sinuous, reciprocation, aberration

List 2:

1. __________ exception XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
2. __________ roundabout XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
3. __________ give and take XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
4. __________ watery XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
5. __________ rage XXXXXXXXXXXXXXXX

List 1: boorish, mediate, delineate, endemic

List 2:

1. __________ recorder XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
2. __________ indigenous XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
3. __________ portray XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
4. __________ coarse XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
5. __________ intervene XXXXXXXXXXXXXXXX

1. aberration
2. sinuous
3. reciprocation
4. none
5. paroxysm

1. none
2. endemic
3. delineate
4. boorish
5. mediate

List 1: paroxysm, sinuous, reciprocation, aberration

List 2:

1. __________ oddity

2. __________ furor

3. __________ devious

4. __________ swapping

5. __________ chilly

[redacted]

List 1: boorish, mediate, delineate, endemic

List 2:

1. __________ negotiate

2. __________ original

3. __________ numerous

4. __________ picture

5. __________ unrefined

[redacted]

1. aberration
2. paroxysm
3. sinuous
4. reciprocation
5. none

1. mediate
2. endemic
3. none
4. delineate
5. boorish

List 1: paroxysm, sinuous, reciprocation, aberration

List 2:

1. __________ trading XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ rectify XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ rarity XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ indirect XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ seizure XXXXXXXXXXXXXXXXX

List 1: boorish, mediate, delineate, endemic

List 2:

1. __________ scenic XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ shocking XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ depict XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ pre-existing XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ interpose XXXXXXXXXXXXXXXXX

1. reciprocation
2. none
3. aberration
4. sinuous
5. paroxysm

1. none
2. boorish
3. delineate
4. endemic
5. mediate

List 1: paroxysm, sinuous, reciprocation, aberration

List 2:

1. __________ sprightly
2. __________ peculiarity
3. __________ fit
4. __________ switch
5. __________ winding

[redacted]

List 1: boorish, mediate, delineate, endemic

List 2:

1. __________ referee
2. __________ represent
3. __________ monstrous
4. __________ inherent
5. __________ snobbish

[redacted]

1. none
2. aberration
3. paroxysm
4. reciprocation
5. sinuous

1. mediate
2. delineate
3. boorish
4. endemic
5. none

List 1: paroxysm, sinuous, reciprocation, aberration

List 2:

1. __________ interchange XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ twisting XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ rescue XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ fever XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ eccentricity XXXXXXXXXXXXXXXXX

List 1: boorish, mediate, delineate, endemic

List 2:

1. __________ interfere XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ characterize XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ gross XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ laborious XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ innate XXXXXXXXXXXXXXXXX

1. reciprocation
2. sinuous
3. none
4. paroxysm
5. aberration

1. mediate
2. delineate
3. boorish
4. none
5. endemic

Booklet 7

Booklet 8

List 1: asseverate, perspicacity, tenuous, redaction

List 2:

1. __________ sagacity
2. __________ revision
3. __________ behave
4. __________ affirm
5. __________ slender

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

List 1: vapid, ignominious, tensity, paradigm

List 2:

1. __________ birthplace
2. __________ dull
3. __________ model
4. __________ disreputable
5. __________ rigidity

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

1. perspicacity
2. redaction
3. none
4. asseverate
5. tenuous

1. none
2. vapid
3. paradigm
4. ignominious
5. tensity

List 1: asseverate, perspicacity, tenuous, redaction

List 2:

1. __________ exceed
2. __________ rare
3. __________ amendment
4. __________ foresight
5. __________ assert

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

List 1: vapid, ignominious, tensity, paradigm

List 2:

1. __________ dry
2. __________ dishonorable
3. __________ pattern
4. __________ excess
5. __________ rigor

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

1. none
2. tenuous
3. redaction
4. perspicacity
5. asseverate

1. vapid
2. ignominious
3. paradigm
4. none
5. tensity

List 1: asseverate, perspicacity, tenuous, redaction

List 2:

1. __________ dreamlike
2. __________ insight
3. __________ declare
4. __________ correction
5. __________ manhood

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

List 1: vapid, ignominious, tensity, paradigm

List 2:

1. __________ manicure
2. __________ standard
3. __________ unrespectful
4. __________ firmness
5. __________ flat

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

1. tenuous
2. perspicacity
3. asseverate
4. redaction
5. none

1. none
2. paradigm
3. ignominious
4. tensity
5. vapid

List 1: asseverate, perspicacity, tenuous, redaction

List 2:

1. __________ state
2. __________ perception
3. __________ illusory
4. __________ sickness
5. __________ edition

XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX

List 1: vapid, ignominious, tensity, paradigm

List 2:

1. __________ infamous
2. __________ tasteless
3. __________ lullaby
4. __________ stiffness
5. __________ rule

XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX

1. asseverate
2. perspicacity
3. tenuous
4. none
5. redaction

1. ignominious
2. vapid
3. none
4. tensity
5. paradigm

List 1: asseverate, perspicacity, tenuous, redaction

List 2:

1. __________ discernment
2. __________ rewrite
3. __________ unreal
4. __________ pronounce
5. __________ absorb

[redacted]

List 1: vapid, ignominious, tensity, paradigm

List 2:

1. __________ tedious
2. __________ abide
3. __________ original
4. __________ discreditable
5. __________ tenseness

1. perspicacity
2. redaction
3. tenuous
4. asseverate
5. none

1. vapid
2. none
3. paradigm
4. ignominious
5. tensity

List 1: asseverate, perspicacity, tenuous, redaction

List 2:

1. __________ penetration XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ feeble XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ contend XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ wintry XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ rearrangement XXXXXXXXXXXXXXXXX

List 1: vapid, ignominious, tensity, paradigm

List 2:

1. __________ notorious XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ example XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ tightness XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ unlively XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ wrinkle XXXXXXXXXXXXXXXXX

1. perspicacity
2. tenuous
3. asseverate
4. none
5. redaction

1. ignominious
2. paradigm
3. tensity
4. vapid
5. none

Booklet 9

Booklet 10

List 1: nascent, mordant, abrogate, confabulate

List 2:

1. __________ abolish XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ converse XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ new XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ leopard XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ bitter XXXXXXXXXXXXXXXXX

List 1: duress, salubrious, callow, inane

List 2:

1. __________ lavatory XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ immature XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ restraint XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ wholesome XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ trivial XXXXXXXXXXXXXXXXX

1. abrogate
2. confabulate
3. nascent
4. none
5. mordant

1. none
2. callow
3. duress
4. salubrious
5. inane

List 1: nascent, mordant, abrogate, confabulate

List 2:

1. __________ immature XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ annul XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ harsh XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ talk XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ decency XXXXXXXXXXXXXXXXX

List 1: duress, salubrious, callow, inane

List 2:

1. __________ confinement XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
2. __________ healthful XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
3. __________ youthful XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
4. __________ shallow XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
5. __________ decorate XXXXXXXXXXXXXXXXX

1. nascent
2. abrogate
3. mordant
4. confabulate
5. none

1. duress
2. salubrious
3. callow
4. inane
5. none

List 1: nascent, mordant, abrogate, confabulate

List 2:

1. __________ urgency
2. __________ speak with
3. __________ repeal
4. __________ severe
5. __________ emerging

[redacted]

List 1: duress, salubrious, callow, inane

List 2:

1. __________ juvenile
2. __________ utility
3. __________ beneficial
4. __________ captivity
5. __________ silly

[redacted]

1. none
2. confabulate
3. abrogate
4. mordant
5. nascent

1. callow
2. none
3. salubrious
4. duress
5. inane

List 1: nascent, mordant, abrogate, confabulate

List 2:

1. __________ segment
2. __________ cancel
3. __________ consult with
4. __________ beginning
5. __________ rough

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

List 1: duress, salubrious, callow, inane

List 2:

1. __________ raw
2. __________ foolish
3. __________ healthy
4. __________ sedentary
5. __________ control

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

1. none
2. abrogate
3. confabulate
4. nascent
5. mordant

1. callow
2. inane
3. salubrious
4. none
5. duress

List 1: nascent, mordant, abrogate, confabulate

List 2:

1. __________ at the start
2. __________ sharp
3. __________ chat
4. __________ learn
5. __________ erase

List 1: duress, salubrious, callow, inane

List 2:

1. __________ benign
2. __________ legible
3. __________ compel
4. __________ idle
5. __________ crude

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

1. nascent
2. mordant
3. confabulate
4. none
5. abrogate

1. salubrious
2. none
3. duress
4. inane
5. callow

List 1: nascent, mordant, abrogate, confabulate

List 2:

1. __________ confer
2. __________ remove
3. __________ initially
4. __________ sarcastic
5. __________ tunnel

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

List 1: duress, salubrious, callow, inane

List 2:

1. __________ frivolous
2. __________ inexperienced
3. __________ good
4. __________ oblige
5. __________ tropic

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

1. confabulate
2. abrogate
3. nascent
4. mordant
5. none

1. inane
2. callow
3. salubrious
4. duress
5. none

RECORD THE FINISH TIME __________ *

---

*This instruction appeared on the last page of every booklet.

Definition Material Used in Vocabulary Study IV

4

NAME ____________________

DIRECTIONS: On the following pages, the meanings of four words are given. Read the definition of each word carefully and then write in the space provided below it a definition in your own words. Remember--try to learn the meaning of each word.

PLEASE RECORD THE TIME

START __________

FINISH __________

TRACTIVE

Heavy weights are often moved by using some kind of tractive device which makes it easier for people to accomplish their task. Thus tractive refers to a pulling or hauling capability of something.

LISSOME

Dance instructors would commonly call a ballerina lissome. Hence, lissome means to be lithe or limber or graceful in motion.

GAUCHE

A person who is generally awkward and lacking in social graces is a gauche individual. Thus, gauche means tactless and clumsy in behavior.

SURREPTITIOUS

A burglar has to make a surreptitious approach to the place he plans to rob if he wants to avoid being caught. Thus surreptitious refers to the secretiveness and deceit in carrying out some plan of action.

RECORD THE FINISH TIME.

JUXTAPOSE

When an architect begins a design of a house, he probably wants to be careful to juxtapose the kitchen and the dining room for the convenience of the homemaker. Juxtapose, therefore, refers to placing things very near to each other or side by side.

ACUMEN

A person who shows he can comprehend a difficult problem quickly and easily can be said to possess acumen. Thus acumen refers to a keenness and quickness of mind.

INVEIGH

An angry man might inveigh bitterly against the cause of his annoyance. Thus to inveigh means to condemn or to blame and implies the making of strong verbal attacks or denunciations of an existing condition.

CELERITY

A man who is in a position of authority often has to act with celerity when immediate difficulties force him to make a decision. Hence, celerity means speed or swiftness.

RECORD THE FINISH TIME.

TAXONOMY

It is often easier to understand a multitude of unrelated events by making a taxonomy for them. Hence, taxonomy pertains to a classification or organization of many things and implies meaningful relationships between all these things.

PARTURITION

When a mother gives birth to her children, she has performed an act of parturition. Thus parturition is concerned with the bringing forth of young.

ALACRITY

A person who performs a task as soon as he perceives it and as though he really wants to do it is acting with alacrity. Thus alacrity implies both immediacy and cheerfulness in the carrying out of some activity.

CHIVALROUS

A person who possesses qualities of generosity, honor and courteousness is said to be chivalrous. Thus chivalrous means unselfish and kind, and usually refers to one who is self-sacrificing and has good character.

RECORD THE FINISH TIME.

RANCID

Only in a second-rate restaurant is one likely to be served a salad dressing made from rancid olive oil. Thus, rancid means in bad condition because of age or lack of proper care.

ANTIPODAL

When a geography teacher speaks of the north and south pole, he is explaining the antipodal regions of the earth. Thus antipodal refers to anything which is exactly opposite or contrary.

EXPLICATION

If a person wishes to make his argument free of obscurities and unlikely to be misinterpreted, he may make an explication. Thus, explication refers to an interpretation or clearing up of a doctrine or other statement.

LIMPID

A pool of water unruffled by waves and uncontaminated by any sort of trash or mud could be called limpid. Thus limpid means free of disrupting or clouding elements.

RECORD THE FINISH TIME.

ABERRATION

Patients in mental hospitals almost always exhibit some behavioral aberrations. Thus an aberration is a departure from what is typical or normal.

PAROXYSM

A paroxysm of rage can be fatal to a person who suffers from high blood pressure. Thus, a paroxysm is an extreme response, either emotional or physical, to a given condition.

SINUOUS

Politicians are well-known for their sinuous remarks to reporters who wish to have direct answers to their questions. Therefore, sinuous pertains to the roundabout and deviating manner which people often use to avoid making clearer statements.

RECIPROCATION

When two people exchange or borrow items of clothing back and forth as girls often do, this is called an act of reciprocation. Thus reciprocation refers to mutual giving and taking.

RECORD THE FINISH TIME.

BOORISH

If a guest at a formal dinner party interrupts the activities and insults his hostess, his fellow guests will likely consider him boorish. Thus, boorish usually describes an unrefined, uncultured manner or habit.

MEDIATE

Many industrial strikes are averted when expert advisors mediate the dispute among the groups concerned. Thus mediate refers to the act of intervention or interfering and implies a condition of negotiation to resolve current problems.

DELINEATE

The teacher asked one of his students to delineate carefully one of the characters in the play so that the rest of the class would understand the role of this individual. Thus, delineate means to describe or portray, usually in a careful or detailed manner.

ENDEMIC

Revolt against the established order seems to be endemic among adolescents of most countries. Hence, endemic pertains to any condition which exists among a particular group or a specific locality.

RECORD THE FINISH TIME.

ASSERVATE

A person having a strong commitment to a personal ideal is likely to asservate his position with conviction. Thus, to asservate means to state or assert positively and earnestly.

PERSPICACITY

When a person has an unusual ability to understand the nature of things in depth, he can be said to possess a great deal of perspicacity. Thus, perspicacity refers to the insight and penetration of matters which are complex and hard to comprehend.

TENUOUS

A mental patient usually has only a tenuous hold on reality. Thus, tenuous refers to something that is unstable or weak.

REDACTION

Members of the United States Congress often make redactions to much of the legislation because of faulty wording of ideas. Thus redaction refers to making revisions or corrections to written material.

RECORD THE FINISH TIME.

VAPID

A poor teacher is often criticized for his vapid presentation of what ordinarily is extremely interesting material. Hence, vapid describes a dull and dry event.

IGNOMINIOUS

A commander in battle who deserts a position before he is forced to can be criticized for his ignominious retreat. Therefore an ignominious act is one which cannot be respected or honored.

TENSITY

When a student is told he must do well on the next exam in order to pass the course, a state of tensity will develop as the exam day and hour approach. Tensity, then, refers to the state of being tense or anxious.

PARADIGM

A teacher is sometimes referred to as a paradigm of a good citizen. Hence paradigm usually pertains to a model or an example.

RECORD THE FINISH TIME.

NASCENT

When any thing or idea is in the very first stages of its development, it is said to be nascent. Therefore nascent means just coming into existence.

MORDANT

When a person criticizes other people with mordant remarks, he may learn later on that he is not very well liked. Thus mordant means harsh or severe and implies bitter and cutting statements to other persons.

ABROGATE

When students wish to remove the present way of grading through an act of the Student Government, their intention is to abrogate this system of evaluation. To abrogate means, then, to abolish or annul by an authoritative act an unacceptable or unsatisfactory condition.

CONFABULATE

People often get together casually and confabulate about the events of the day. Thus, confabulate means to converse or talk informally.

RECORD THE FINISH TIME.

SALUBRIOUS

Doctors recommend a warm, dry climate vacation as being salubrious for patients with arthritis. Therefore, salubrious refers to a condition favorable to health or promoting health.

CALLOW

A man who shows off in front of his friends because he has received a promotion at his job could be called a callow fellow. Thus callow means immature and implies a rather raw or infantile stage of development.

INANE

Cocktail party conversation is more likely than not to be inane. Thus, inane means empty of meaning or sense.

DURESS

When a person is deprived of the ability to speak or to move about freely, he is under duress. Thus duress is the condition of being held in check by either force or fear.

RECORD THE FINISH TIME.

APPENDIX D

Table of Contents

LEARNING MATERIALS FOR MATHEMATICAL OPERATIONS STUDIES....................................D-2

You are asked to participate in an experiment the purpose of which is to determine which of several ways is most efficient in teaching students certain operations.

Name: ____________________

Sex: Male ____ Female ____

Class: ____________________

Previous mathematics courses: ____________________

____

____

You are asked to participate in an experiment the purpose of which is to determine which of several ways is most efficient in teaching students certain operations.

Name: ____________________

Sex: Male ___ Female ____

Class: ____________________

Previous mathematics courses: ____________________

____

____

Please record the time written on the board.

Time ______________________

Please record the time written on the board.

Time ______________________

You are going to be presented with certain concepts. After being given an opportunity to study these concepts you will be tested on some combinations of these concepts. Please read the material carefully, respond in the blanks provided and then check your answers on the following page.

You are going to be presented with certain concepts. After being given an opportunity to study these concepts you will be tested on some combinations of these concepts. Please read the material carefully, respond in the blanks provided and then check your answers on the following page.

Definition:

$\left\|\begin{matrix} x_1 \\ x_2 \end{matrix}\right\|$ is a symbol for a vector. x_1 and x_2 are symbols that stand for certain real numbers. x_1 is in the first position and x_2 is in the second position.

Definition:

A vector is an ordered pair of real numbers. A vector is said to be ordered because one member of the pair is said to be in a first position while the other member of the pair is said to be in a second position.

$\begin{Vmatrix} x_1 \\ x_2 \end{Vmatrix}$ is a symbol for a ________________.

x_1 is in the ________________ position.

x_2 is in the ________________ position.

x_1 and x_2 are symbols for dertain real ______________.

An ordered pair of real numbers is a ________________. It is said to be ordered because one number is in the ________________ position while the other number is in the ________________ position. The numbers that make up the vector are certain real ________________.

vector

first

second

numbers

vector

first

second

numbers

$\left\|\begin{matrix} y_1 \\ y_2 \end{matrix}\right\|$ is a symbol for a _______________.

y_1 is in the _______________ position.

y_2 is in the _______________ position.

y_1 and y_2 are symbols for certain _______________ numbers.

Any ordered pair of real numbers is a _______________.

Any pair of numbers that form a vector is said to be ordered because one number is in the _______________ position while the other number is in the _______________ position.

The numbers that make up the vectors are certain _______________ numbers.

vector

first

second

real

vector

first

second

real

$\left\|\begin{matrix}3\\4\end{matrix}\right\|$ is a symbol for a _______________.

3 is in the _______________ position.

4 is in the _______________ position.

3 and 4 are symbols for certain _______________ numbers.

An ordered pair of numbers with a three in the first position and a four in the second position is a

_______________.

The three is in the _______________ position.

The four is in the _______________ position.

The three and the four are certain _______________ numbers.

vector

first

second

real

vector

first

second

real

Definition:

The product of two vectors $\left|\begin{matrix} x_1 \\ x_2 \end{matrix}\right\|$ and $\left|\begin{matrix} y_1 \\ y_2 \end{matrix}\right\|$, written

$$\left|\begin{matrix} x_1 \\ x_2 \end{matrix}\right\| * \left|\begin{matrix} y_1 \\ y_2 \end{matrix}\right\| ,$$

is defined by:

$$\left|\begin{matrix} x_1 \\ x_2 \end{matrix}\right\| * \left|\begin{matrix} y_1 \\ y_2 \end{matrix}\right\| = (x_1) \, . \, (y_1) + (x_2) \, . \, (y_2)$$

Definition:

The product of two vectors, when the two vectors are expressed as orders pairs of real numbers, is defined by the following three steps:

1. multiply the first number in one of the vectors by the first number in the other vector.
2. multiply the second number in one of the vectors by the second number in the other vector.
3. add together the results of steps number 1 and 2.

Examples:

1. $\begin{Vmatrix}3\\4\end{Vmatrix} * \begin{Vmatrix}5\\6\end{Vmatrix} = 3.5 + 4.6 = 15 + 24 = 39$

2. $\begin{Vmatrix}2\\3\end{Vmatrix} * \begin{Vmatrix}4\\7\end{Vmatrix} = 2.4 + 3.7 = 8 + 21 = 29$

Examples:

1. The product of a vector which has a three in the first position and a four in the second position, with a vector which has a five in the first position and a six in the second position equals 39, which is the sum of three times five and four times six.
2. The product of a vector which has a two in the first position and a three in the second position, with a victor which has a four in the first position and a seven in the second position equal 29, which is the sum of two times four and three times seven.

$$\begin{Vmatrix}6\\2\end{Vmatrix} * \begin{Vmatrix}3\\4\end{Vmatrix} = \_\_\_\_\,x\,\_\_\_\_ + \_\_\_\_\,x\,\_\_\_\_ = \_\_\_\_ + \_\_\_\_ = \_\_\_\_$$

The product of a vector which has a six in the first position and a two in the second position, with a vector which has a three in the first position and a four in the second position equals

________times________plus________times_______which equals

________plus________which equals________.

$\underline{6} \times \underline{3} + \underline{2} \times \underline{4} = \underline{18} + \underline{8} = \underline{26}$

$\underline{6}$ times $\underline{3}$ plus $\underline{2}$ times $\underline{4}$ which equals $\underline{18}$ plus $\underline{8}$ which equals $\underline{26}$.

$$\begin{Vmatrix}5\\3\end{Vmatrix} * \begin{Vmatrix}9\\7\end{Vmatrix} = \_\_\_\_ \mathrm{x} \_\_\_\_ + \_\_\_\_ \mathrm{x} \_\_\_\_ = \_\_\_\_ + \_\_\_\_ = \_\_\_\_$$

The product of a vector which has a five in the first position and a three in the second position, with a vector which has a nine in the first position and a seven in the second position equals_________times _________plus_________times_________which equals _________plus_________which equals_________.

5 9 3 7 45 21 66

5	9	3	7
45	21		66

Please record the time written on the board.

Time ________________

Please record the time written on the board.

Time ________________

You are going to be presented with certain additional concepts. After being given an opportunity to study these concepts you will be tested on some combinations of these concepts. Please read the material carefully, respond in the blanks provided and then check your answers on the following page.

You are going to be presented with certain additional concepts. After being given an opportunity to study these concepts you will be tested on some combinations of these concepts. Please read the material carefully, respond in the blanks provided and then check your answers on the following page.

Definition:

ax^my^n is an algebraic expression.

a, m and n are symbols for certain real numbers.

x and y are variables. Note that m and n are exponents.

Examples:

$3x^4y^8$ where $a = 3$, $m = 4$, and $n = 8$.

$5x^2y^4$ where $a = 5$, $m = 2$, and $n = 4$.

$2x^9y^5$ where $a = 2$, $m = 9$, and $n = 5$.

$19x^7y^{42}$ where $a = 19$, $m = 7$, and $n = 42$.

Definition:

An algebraic expression is composed of letters of the alphabet which stand for certain real numbers. It is written in the form ax^my^n. Note that m and n are exponents.

Examples:

$3x^4y^8$ where $a = 3$, $m = 4$, and $n = 8$.

$5x^2y^4$ where $a = 5$, $m = 2$, and $n = 4$.

$2x^9y^5$ where $a = 2$, $m = 9$, and $n = 5$.

$19x^7y^{42}$ where $a = 19$, $m = 7$, and $n = 42$.

$6x^4y^3$ is an ______________ expression,

where $a =$ _________, $m =$ _________ and $n =$ ________.

$6x^4y^3$ is an ______________ expression,

where $a =$ _________, $m =$ _________ and $n =$ ________.

algebraic

6, 4, 3

algebraic

6, 4, 3

$5x^9y^3$ is an algebraic ______________,

where a = _________, m = _________ and n = ________.

$5x^9y^3$ is an algebraic ______________,

where a = _________, m = _________ and n = ________.

expression

5, 9, 3

expression

5, 9, 3

Definition:

$D_x(\quad)$, read as the derivative with respect to x, is a symbol that stands for a certain operation on whatever algebraic expression appears in the parentheses. That is, $D_x(ax^my^n)$ is read as the derivative of ax^my^n with respect to x.

$D_x(ax^my^n)$ transforms the given algebraic expression, ax^my^n, into another algebraic expression by use of the rule

$$D_x(ax^my^n) = m\cdot ax^{m-1}y^n.$$

Definition:

The derivative of an algebraic expression, with respect to x, transforms the given algebraic expression, ax^my^n, into another algebraic expression. This transformation is accomplished by complying with the following two steps

1. Multiply the given algebraic expression by the exponent of x;
2. Reduce the exponent of x in the algebraic expression resulting from step 1 by one.

Examples:

(1) $D_x(3x^4y^6) = 4 \cdot 3x^{4-1}y^6 = 12x^3y^6$

(2) $D_x(4x^5y^3) = 5 \cdot 4x^{5-1}y^3 = 20x^4y^3$

Examples:

(1) The derivative of $3x^4y^6$ with respect to x gives $4 \cdot 3x^4y^6 = 12x^4y^6$ by the first step and $12x^{4-1}y^6 = 12x^3y^6$ by the second step.

(2) The derivative of $4x^5y^3$ with respect to x gives $5 \cdot 4x^5y^3 = 20x^5y^3$ by the first step and $20x^{5-1}y^3 = 20x^4y^3$ by the second step.

$D_x(6x^5y^4)$ = ________________ = __________________.

The derivative of $6x^5y^4$ with respect to x equals

_________________.

$$5 \cdot 6x^{5-1}y^4 = 30x^4y^4$$

$$30x^4y^4$$

$D_x(5x^3y^2)$ = ________________ = ________________.

The derivative of $5x^3y^2$ with respect to x equals

________________.

$$3 \cdot 5x^{3-1}y^2 = 15x^2y^2$$

$$15x^2y^2$$

Definitions:

$D_y(\qquad)$, read as the derivative with respect to y, is a symbol that stands for a certain operation on whatever algebraic expression appears in the parentheses. That is, $D_y(ax^m y^n)$ is read as the derivative of $ax^m y^n$ with respect to y.

$D_y(ax^m y^n)$ transforms the given algebraic expression, $ax^m y^n$, into another algebraic expression by use of the rule

$$D_y(ax^m y^n) = n \cdot ax^m y^{n-1}$$

Definition:

The derivative of an algebraic expression, with respect to y, transforms the given algebraic expression, $ax^m y^n$, into another algebraic expression. This transformation is accomplished by complying with the following two steps:

1. multiply the given algebraic expression by the exponent of y;

2. reduce the exponent of y in the algebraic expression resulting from step 1 by one.

Examples:

(1) $D_y(3x^4y^6) = 6 \cdot 3x^4y^{6-1} = 18x^4y^5$

(2) $D_y(4x^5y^3) = 3 \cdot 4x^5y^{3-1} = 12x^5y^2$

Examples:

(1) The derivative of $3x^4y^6$ with respect to y gives $6 \cdot 3x^4y^6 = 18x^4y^6$ by the first step and $18x^4y^{6-1} = 18x^4y^5$ by the second step.

(2) The derivative of $4x^5y^3$ with respect to y gives $3 \cdot 4x^5y^3 = 12x^5y^3$ by the first step and $12x^5y^{3-1} = 12x^5y^2$ by the second step.

$D_y(5x^2y^6)$ = ______________ = ______________.

The derivative of $5x^2y^6$ with respect to y equals

______________.

$$6 \cdot 5x^2y^{6-1} = 30x^2y^5$$

$$30x^2y^5$$

$D_y(2x^3y^5 =$ ______________ = ______________.

The derivative of $2x^3y^5$ with respect to y equals

______________.

$$5 \cdot 2x^3y^{5-1} = 10x^3y^4$$

$$10x^3y^4$$

Note that $D_x(6x^3y^5) = 18x^2y^5$ while $D_y(6x^3y^5) = 30x^3y^4$.
$D_x(6x^3y^5)$ requires a certain operation with the exponent of x.
$D_y(6x^3y^5)$ requires a certain operation with the exponent of y.

Note that the derivative of $6x^3y^5$ with respect to x equals $18x^2y^5$ while the derivative of $6x^3y^5$ with respect to y equals $30x^3y^4$.
The derivative of $6x^3y^5$ with respect to x requires a certain operation with the exponent of x.
The derivative of $6x^3y^5$ with respect to y requires a certain operation with the exponent of y.

Please record the time written on the board.

Time ____________________

Please record the time written on the board.

Time ____________________

You are now ready to take a test on the preceding material. You may refer back to the preceding material if necessary.

You are now ready to take a test on the preceding material. You may refer back to the preceding material if necessary.

TEST

1. $\begin{Vmatrix} 8 \\ 7 \end{Vmatrix} \ast \begin{Vmatrix} 3 \\ 5 \end{Vmatrix} =$ ____________________?

2. $\begin{Vmatrix} 6 \\ 4 \end{Vmatrix} \ast \begin{Vmatrix} 5 \\ 2 \end{Vmatrix} =$ ____________________?

TEST

1. Multiply the vector which has an eight in the first position and a seven in the second position by a vector which has a three in the first position and a five in the second position.

    ________________________ Answer

2. Multiply the vector which has a six in the first position and a four in the second position by the vector which has a five in the first position and a two in the second position.

    ________________________ Answer

3. $\begin{vmatrix} 5 \\ 8 \end{vmatrix} \cdot \begin{vmatrix} 6 \\ 3 \end{vmatrix} + 4 =$ ____________________?

3. Multiply the vector which has a five in the first position and an eight in the second position by a vector which has a six in the first position and a three in the second position and then, to this result, add four.

____________________Answer

4. $\left\|\begin{matrix}12\\5\end{matrix}\right\| * \left\|\begin{matrix}2\\1\end{matrix}\right\| - 6 =$ ____________________?

4. Multiply the vector which has a twelve in the first position and a five in the second position by a vector which has a two in the first position and a one in the second position and then, from this result, subtract six.

________________________ Answer

5. $3\left(\left\|\begin{matrix}7\\3\end{matrix}\right\| * \left\|\begin{matrix}4\\5\end{matrix}\right\| \right) =$ ______________________?

5. Multiply the vector which has a seven in the first position and a three in the second position by a vector which has a four in the first position and a five in the second position and then multiply this result by three.

_________________________ Answer

6. $5\left(\begin{Vmatrix} 6 \\ 9 \end{Vmatrix} * \begin{Vmatrix} 3 \\ 8 \end{Vmatrix} \right) =$ ______________________?

6. Multiply the vector which has a six in the first position and a nine in the second position by a vector which has a three in the first position and an eight in the second position and then multiply this result by five.

______________________Answer

7. $\begin{Vmatrix} 4 \\ 6 \end{Vmatrix} * \begin{Vmatrix} 9 \\ 3 \end{Vmatrix} + \begin{Vmatrix} 6 \\ 7 \end{Vmatrix} * \begin{Vmatrix} 3 \\ 8 \end{Vmatrix} =$ ____________________?

7. Multiply the vector which has a four in the first position and a six in the second position by a vector which has a nine in the first position and a three in the second position, and add the result to the number obtained by multiplying a vector which has a six in the first position and a seven in the second position by a vector which has a two in the first position and an eight in the second position.

______________________Answer

8. $\begin{Vmatrix}3\\7\end{Vmatrix} * \begin{Vmatrix}5\\9\end{Vmatrix} + \begin{Vmatrix}11\\10\end{Vmatrix} * \begin{Vmatrix}7\\12\end{Vmatrix} =$ ____________________?

8. Multiply the vector which has a three in the first position and a seven in the second position by a vector which has a five in the first position and a nine in the second position, and add the result to the number obtained by multiplying a vector which has an eleven in the first position and a ten in the second position by a vector which has a seven in the first position and a twelve in the second position.

______________________Answer

9. Find x so that $\left\|\begin{matrix}3\\4\end{matrix}\right\| * \left\|\begin{matrix}6\\x\end{matrix}\right\| = 30$.

________________________ Answer

9. The product of two vectors is thirty. If one of the vectors has a three in the first position and a four in the second position while the other vector has a six in the first position then what is in the second position of the latter vector?

________________________ Answer

10. Find x so that $\left\|\begin{matrix}3\\8\end{matrix}\right\| \cdot \left\|\begin{matrix}5\\x\end{matrix}\right\| = 47$.

________________________ Answer

10. The product of two vectors is forty seven. If one of the vectors has a three in the first position and an eight in the second position while the other has a five in the first position then what is in the second position of the latter vector?

________________________ Answer

11. $\left\| \begin{matrix} 3 \\ 4 \end{matrix} \right\| \cdot \left\| \begin{matrix} 7 \\ 2 \end{matrix} \right\| \div \left\| \begin{matrix} 2 \\ 9 \end{matrix} \right\| \cdot \left\| \begin{matrix} 6 \\ 3 \end{matrix} \right\| =$ ____________________?

11. Multiply a vector with a three in the first position and a four in the second position by a vector which has a seven in the first position and a two in the second position; then divide this result by a number obtained from multiplying a vector with a two in the first position and a nine in the second position by a vector which has a six in the first position and a three in the second position.

____________________ Answer

12. $\left\| \begin{matrix} \left\| \begin{matrix} 6 \\ 4 \end{matrix} \right\| * \left\| \begin{matrix} 7 \\ 1 \end{matrix} \right\| \\ \left\| \begin{matrix} 2 \\ 3 \end{matrix} \right\| * \left\| \begin{matrix} 6 \\ 9 \end{matrix} \right\| \end{matrix} \right\| = \qquad ?$

12. Form a vector such that the number in the first position is the product of a vector which has a six in the first position and a four in the second position with a vector which has a seven in the first position and a one in the second position; and such that the number in the second position is the product of a vector which has a two in the first position and a three in the second position with a vector which has a six in the first position and a nine in the second position.

________________________ Answer

Please record the time written on the board.

Time ____________________

Please record the time written on the board.

Time ____________________

TEST

1. $D_x(3x^4y^6)$ = ____________________?

2. $D_y(5x^3y^4)$ = ____________________?

3. $D_x(7x^5y^3)$ = ____________________?

4. $D_y(9x^6y^7)$ = ____________________?

TEST

1. The derivative of $3x^4y^6$ in respect to x equals ____________________.

2. The derivative of $5x^3y^4$ in respect to y equals ____________________.

3. The derivative of $7x^5y^3$ in respect to x equals ____________________.

4. The derivative of $9x^6y^7$ in respect to y equals ____________________.

5. $D_y(D_x(2x^8y^6)) =$ ____________________?

6. $D_x(D_y(5x^3y^7)) =$ ____________________?

5. The derivative with respect to y of the derivative with respect to x of $2x^8y^6$ equals ______________.

6. The derivative with respect to x of the derivative with respect to y of $5x^3y^7$ equals ______________.

7. Find ax^my^n so that $D_x(ax^my^n) = 16x^3y^5$.

____________________ Answer

8. Find ax^my^n so that $D_y(ax^my^n) = 32x^5y^7$.

____________________ Answer

7. For what algebraic expression, ax^my^n, does the derivative in respect to x equal $16x^3y^5$?

____________________ Answer

8. For what algebraic expression, ax^my^n, does the derivative with respect to y equal $32x^5y^7$?

____________________ Answer

9. Find ax^my^n, so that $D_x(ax^my^n) = 15x^4y^3$.

____________________ Answer

10. Find ax^my^n so that $D_y(ax^my^n) = 18x^9y^8$.

____________________ Answer

9. For what algebraic expression, ax^my^n, does the derivative with respect to x equal $15x^4y^3$?

____________________ Answer

10. For what algebraic expression, ax^my^n, does the derivative with respect to y equal $18x^9y^8$?

____________________ Answer

11. Find the value of $D_x\ (7x^3y^8)$ when $x = 5$ and $y = 3$.

________________________ Answer

11. Find the value of the derivative of $7x^3y^8$, with respect to x, when x equals five and y equals three.

________________________ Answer

12. Find the value of D_y $(6x^9y^3)$ when $x = 3$ and $y = 2$.

______________________ Answer

12. Find the value of the derivative of $6x^9y^3$, with respect to x, when x equals three and y equals two.

______________________ Answer

13. $D_x(8x^3y^5) + D_y(4x^7y^4) =$ ______________?

13. The derivative of $8x^3y^9$ with respect to x plus the derivative of $4x^7y^4$ with respect to y equals __________.

14. Find the value of $D_x(6x^3y^3)$ + $D_y(8x^5y^3)$ when $x = 2$ and $y = 3$.

____________________ Answer

14. Find the value of the derivative of $6x^3y^3$ with respect to x plus the derivative of $8x^5y^3$ with respect to y when x equals two and y equals three.

____________________ Answer

5

Please record the time written on the board.

Time ____________________

Please record the time written on the board.

Time ____________________

1. $D_x(3x^my^n) =$ ____________________ when $m = \left\|\begin{matrix}3\\4\end{matrix}\right\| * \left\|\begin{matrix}2\\1\end{matrix}\right\|$ and $n = \left\|\begin{matrix}4\\1\end{matrix}\right\| * \left\|\begin{matrix}2\\3\end{matrix}\right\|$.

1. The derivative of $3x^my^n$ with respect to x equals ____________________ when m is the product of a vector which has a three in the first position and a four in the second position with a vector which has a two in the first position and a one in the second position, and n equals the product of a vector which has a four in the first position and a one in the second position with a vector which has a two in the first position and a three in the second position.

2. $\left\|\begin{matrix}3\\4\end{matrix}\right\| * \left\|\begin{matrix}2\\5\end{matrix}\right\| \quad (D_x(5x^6y^4)) =$ ______________________?

2. Multiply the derivative of $5x^6y^4$ with respect to x by the product of a vector which has a three in the first position and a four in the second position with a vector which has a two in the first position and a five in the second position.

______________________ Answer

3. Find the value of $D_y(D_x(6x^2y^3))$ when

$x = \left\|\begin{matrix}1\\2\end{matrix}\right\| * \left\|\begin{matrix}3\\2\end{matrix}\right\|$ and $y = 3$.

________________________ Answer

3. Find the value of the derivative with respect to y of the derivative with respect to x of $6x^2y^3$ when y equals three and x equals the product of a vector which has a one in the first position and a two in the second position with a vector which has a three in the first position and a two in the second position.

________________________ Answer

4. Find the value of $ax^m y^n$ when $D_x(ax^m y^n) = 8x^3 y^4$,

$x = \left\|\begin{matrix}3\\4\end{matrix}\right\| * \left\|\begin{matrix}5\\2\end{matrix}\right\|$, and $y = \left\|\begin{matrix}2\\1\end{matrix}\right\| * \left\|\begin{matrix}3\\6\end{matrix}\right\|$.

________________________ Answer

4. Find the value of $ax^m y^n$ when the derivative of $ax^m y^n$ equals $8x^3 y^4$, x equals the product of a vector which has a three in the first position and a four in the second position with a vector which has a five in the first position and a two in the second position, and y equals the product of a vector which has a two in the first position and a one in the second position with a vector which has a three in the first position and a six in the second position.

________________________ Answer

5. $ax^my^n =$ ________________ when $D_x(ax^my^n) = 6x^ry^3$

and $r = \left\|\begin{matrix}2\\3\end{matrix}\right\| * \left\|\begin{matrix}4\\1\end{matrix}\right\|$.

5. Find the algebraic expression ax^my^n such that the derivative of ax^my^n with respect to x equals $6x^ry^3$ when r equals the product of a vector which has a two in the first position and a three in the second position with a vector which has a four in the first position and a one in the second position.

________________________ Answer

6. ax^my^n = ________________ when $D_x(ax^my^n) = 5x^3y^r$

and $r = \left\|\begin{matrix}3\\2\end{matrix}\right\| * \left\|\begin{matrix}6\\1\end{matrix}\right\|$.

6. Find the algebraic expression ax^my^n such that the derivative of ax^my^n with respect to x equals $5x^3y^r$ when r equals the product of a vector which has a three in the first position and a two in the second position with a vector which has a six in the first position and a one in the second position.

________________________Answer

You have completed a portion of the experiment. Please record the time written on the board.

Time ____________________

You have completed a portion of the experiment. Please record the time written on the board.

Time ____________________